SEPTEMBER, 1942

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

OUR ROTARY KILNS
in the
WAR PROGRAM
PLAY AN IMPORTANT PART
IN THE MAKING OF

MAGNESIUM
MANGANESE
ALUMINUM
DOLOMITE
CEMENT
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LIME
IRON
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F. L. SMIDTH & CO.

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Only ONE Crusher Needed for the Job!



The WILLIAMS "SLUGGER"
crushes ONE MAN size rock or screen rejects to 1¼" — ¾" or

AGRICULTURAL LIMESTONE
in One Operation

Open view of Williams "Slugger" crusher showing heavy duty hammers, liners and discs.

The Williams "Slugger" Crusher and Pulverizer now makes it possible to crush large pieces of stone weighing from 75 to 100 pounds to AGRICULTURAL LIMESTONE in One Operation. This not only eliminates sledging but also does away with the unnecessary expense of a primary crusher.

The "Slugger" represents the most advanced type of crushing equipment on the market today and with seven sizes to choose from producing from 4 to 30 tons per hour, every producer whether large or small can now afford to install a Williams.

Outstanding "Slugger" Features

- **MANGANESE STEEL HAMMERS.** Heavy Duty Slug end hammers are standard equipment in the "Slugger".
- **HAMMER ADJUSTMENTS OVERCOME WEAR.** Discs are arranged so that the hammers can be set out as they wear on the end.
- **MANGANESE STEEL ADJUSTABLE BREAKER PLATE.** Adjustable towards the hammers.
- **ELECTRIC STEEL FRONT END.** The part which holds the breaker plate is electric steel casting—3½ times stronger than cast iron.
- **COVER LINERS 1" THICK.** Manganese steel liners.
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- **SEVEN SIZES.** 30 to 150 horsepower, stationary or portable models.

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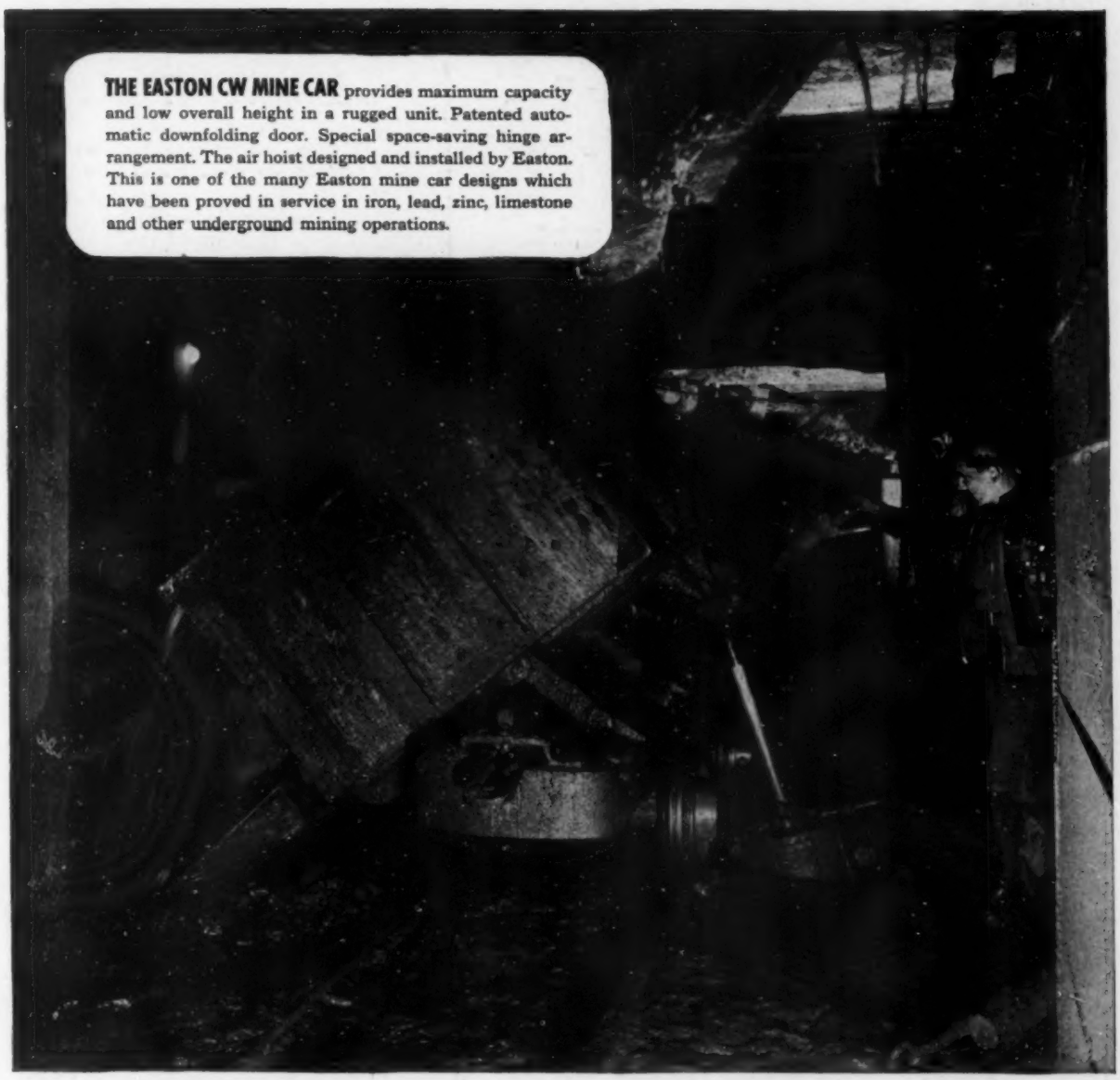
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OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

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PATENT CRUSHERS GRINDERS SHREDDERS



THE EASTON CW MINE CAR provides maximum capacity and low overall height in a rugged unit. Patented automatic downfolding door. Special space-saving hinge arrangement. The air hoist designed and installed by Easton. This is one of the many Easton mine car designs which have been proved in service in iron, lead, zinc, limestone and other underground mining operations.

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It's wet iron ore and it sticks like heavy mud! The haulage ways are so narrow that you flatten against the wall to let the cars roll by. Because of limited overhead clearance the cars are built as low as possible. And there's no room for a weakness anywhere when the container is bounced on the hoist to shake loose those tons of sticky ore. Easton CW Mine Cars have licked this tough job through months of triple-shift War Production.

Duplicated on no other installation, the Easton CW Car is a product of Easton haulage engineering – in this case to meet the specific conditions of wet ore and narrow drifts. *Your* haulage problem, in open pit or underground mine, in quarry, or in factory, *is different, too.* To help you to achieve your desired capacity at lowest cost per ton in any material handling operation Easton Engineers are at your service. Write to Easton Car & Construction Co., Easton, Pa.

EASTON

INDUSTRIAL CARS · TRAILERS · ELECTRIC LIFT TRUCKS

Rock Products

Recognized the World Over as the Leader in Its Field

With which have been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 45, No. 9, SEPTEMBER, 1942

Contents of This Issue

Must Be Gamblers to Win — *Nathan C. Rockwood* — 29

Ball Mills Ahead of Tube Mills — 34
Medusa Portland Cement Co. getting best clinker grinding results with large mills in simple closed circuits

Change Over from Quarry to Mine — 36
Central Rock Co. opens shaft type limestone mine adjacent to quarry without shutting down operations

Recovering Mica from Kaolin — *Bror Nordberg* — 40
Kaolin, Inc., finds it profitable to recover mica fines by flotation and tabling

Self-Cleaning Dewatering Screen Separates Sand Into Sizes — 44

Maintenance and Care of Portable Air Compressors — *Russell Gross* — 46
Recommended practices designed to obtain maximum service from compressors

Practical Operation Conveyor Belt — *Melvin C. Dow and Harvey A. Harnden* — 47
Part 4: Precautions which must be observed to assure safe operation of conveyor belts

Control and Collection of Industrial Dust — *E. D. Powers* — 48
Part 3: High efficiency cyclones

Magnesium from Lime — *Nathan C. Rockwood* — 50
Future lime industry will have new outlets in chemical and metallurgical fields

Mining and Grinding Feldspar — *R. Carl Moore* — 52
Consolidated Feldspar Corp. mining methods near New York City represent 70 years of experience

Determining Accident Causes — *A. J. R. Curtis* — 54

How Middle West Built Up Market for Liming Material—Part 3: — *J. R. Bent* — 56

Carbon Dioxide from Lime Kilns — *Victor J. Azbe* — 57

Hydrated Lime for Thermal Insulation — *F. C. Mathers and Henry S. Wilson* — 58

Bell-and-Spigot Pipe Made to West Virginia "Specs" — 61

Selling Block to the Coal Mines — *Bror Nordberg* — 64

Ready Mix Concrete Trucks Have Dual Function — 68

Departments

Editorial	29	New Equipment	74
Hints and Helps	30	News of the Month	76
News About People	32	Traffic News	85
Concrete Products	57	Obituaries	92
Chemists' Corner	58	Index to Advertisers	102

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Grip a Bending V-Belt

You'll See *How* the

CONCAVE SIDE

Saves Belts-Saves Rubber-Saves Power!

Bend *any* V-belt and you can feel it change shape! The top is under tension and grows narrower. The bottom is under pressure—therefore it widens. These two conflicting stresses force a straight-sided V-belt to *bulge* in the sheave groove. (See figure 1 on the right.) This bulging causes uneven wear on the sides of the belt—*shorter life!*

Now look at figure 2. There you see what happens if the V-belt is built with the patented Concave side. The stresses of bending merely straighten the Concave side—making it exactly fit the sheave groove. This means uniform wear and, therefore, *longer life*—a saving in belts, a saving in the Nation's rubber supply. Again, the full side of the belt *uniformly* grips the pulley—carries heavier loads without slipping—another saving of belts and a saving in power too!

Only belts built by Gates are built with the Concave side, a Gates patent.

What Happens When a V-Belt Bends



FIG. 1



FIG. 2

THE GATES RUBBER COMPANY

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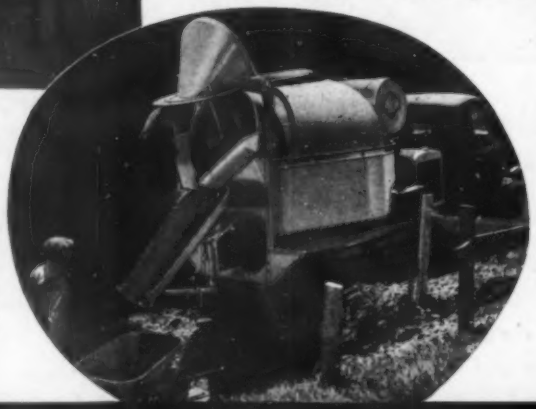
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● Ready Mixed Concrete Operators frequently express surprise that their Smith-Mobiles mix and deliver concrete in such relatively short time . . . *faster than any previously owned truck mixers.* And yet, it's really no surprise at all. Smith-Mobiles have every modern time-saving feature . . . eliminate many tedious operations . . . give you the fastest batch cycle in the industry. Today — SPEED is an important factor — especially on big U. S. Defense jobs. So why plod along with slow, obsolete equipment? Buy modern Smith-Mobiles. Write for Catalog 198-B.

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●

FASTER and better mixing. Shrinking and mixing start the instant the batch enters the drum, because the drum rotates during the charging operation. Scientific blade design produces positive "end-to-end" movement of aggregates. Sealing door can be opened wide during mixing cycle. You can look in drum and actually SEE what's going on.



FASTER delivery of the concrete into the forms. High discharge . . . 27" to 34" higher than old-style truck-mixers. Permits steeper and longer distributing spout. Covers greater area even with dry concrete. Pours concrete directly into high forms, hoppers, buckets or carts. No hoist or ramp required.

SMITH-MOBILE

A 3816-1P

"GULF LUBRICATION *is a proven aid to greater production*"

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Quarry and crusher plant equipment performs better and stays on the job longer when its moving parts are protected by the proper Gulf quality lubricant.

"With Gulf Engineering Service and Gulf Quality Lubricants we secure more efficient equipment performance and fewer mechanical delays — which add up to increased output."

"RECENTLY we adopted a lubrication policy that has been a big help to us in meeting demands for greater tonnage," says a quarry Superintendent. "First, we called in a Gulf engineer. Then we standardized on the quality lubricants and application methods he recommended. Result: a reduction in equipment 'down' time for overhauls and repairs, and an increase in quarry output."

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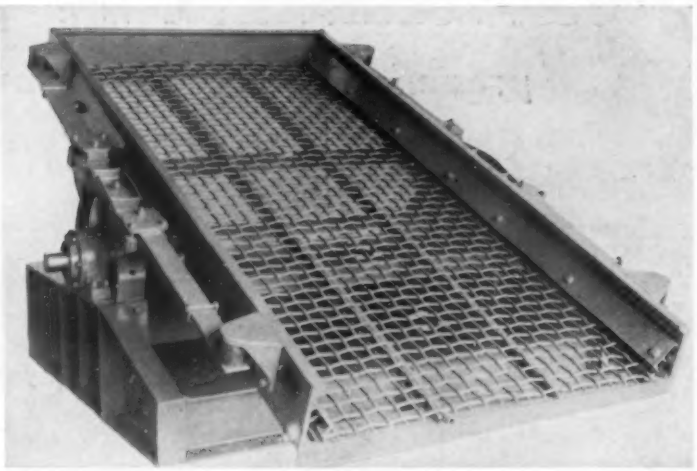
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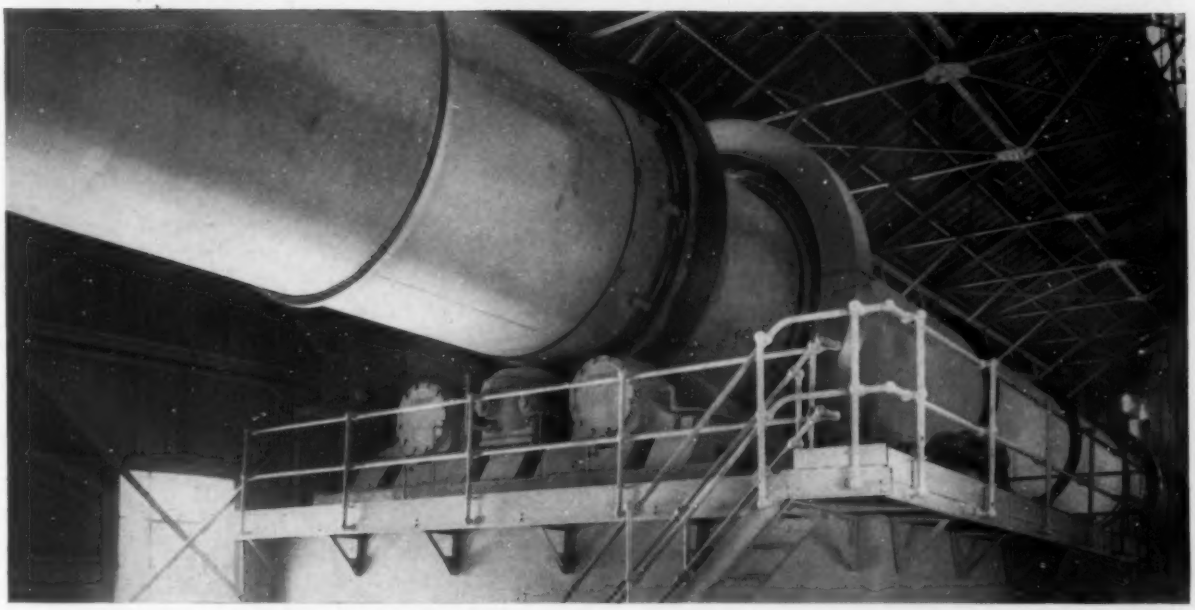
Ranging from 600 r.p.m. for screening 4" materials up to 1200 r.p.m. for screening fine materials, this Huron Heaviduty Screen joins the parade of hard-working machines that are turning out vast quantities of raw materials for War. And helping it to do a good job *fast* are SKF Spherical Roller Bearings on main and eccentric locations. Let shaft deflections, distortions and weave occur as they will, SKF's compensate for them without binding. Their built-in alignment insures high load carrying capacity at all times. And they never need correction for wear. Think of these advantages the next time you see this screen in action, and you'll know why so many machines devoted to War Production jobs are equipped with SKF Ball and Roller Bearings. 5118

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TRAYLOR

KILNS ★ COOLERS ★ DRYERS



WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
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Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Compartment Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

Only a few months after the World War, Traylor built its first Rotary Kiln, an enormous (?) unit 9'-0" dia. x 175'-0"!, —for a large cement manufacturer. For its day, that first kiln of ours was something of a marvel of improvement, but that was merely a matter of maintaining a Traylor tradition that has endured since the founding of the company,—"always the most modern and best."

Since that far date, we have built literally "miles of Rotary Kilns," to say nothing of other miles of the Rotary Coolers and Dryers that usually accompany them, and of right smart size, too,—up to 12'-0" dia. x 450'-0" long. Also, in the building, over the years, Traylor has pioneered many improvements that are now demanded of all makers. Another circumstance,—our original cement-maker customers, and others in that industry since, secured such satisfactory results that lime makers, chemical manufacturers, paper mills and mining companies were eager to share the benefits accruing from the use of Traylor Rotary Kilns, Coolers and Dryers,—and did, and are, in steadily increasing numbers.

Producers in the industries mentioned above, and in others using equipment of this type, who do not know Traylor Rotary Kilns, Coolers and Dryers, will profit greatly by closely investigating these machines. Our always-available representative will call whenever desired. Write us, today.

WRITE FOR BULLETIN NO. 115

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(Midnight on the Albany Post Road, as the big Mack, "Honeygirl," rolls back onto the job out of an all night eatery. Sketched from life by Peter Helck.)

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THE VERY FIRST MACK ever built stayed in service for 17 years. The ninth Mack, built in 1901, is still in running condition, although retired after a million miles of service. Right now, 7 of every 10 Mack trucks built 10 years ago are still on the job. How can you beat a record like that? Where else can you find trucks equal to these? The answer's simple —*you can't!* From one ton to forty-five tons, a Mack is your *best* truck in the end because a Mack is *more* truck to begin with!

Mack Trucks, Inc., Long Island City, N. Y.

Plants at Allentown, Pa., New Brunswick, N. J., Plainfield, N. J.;
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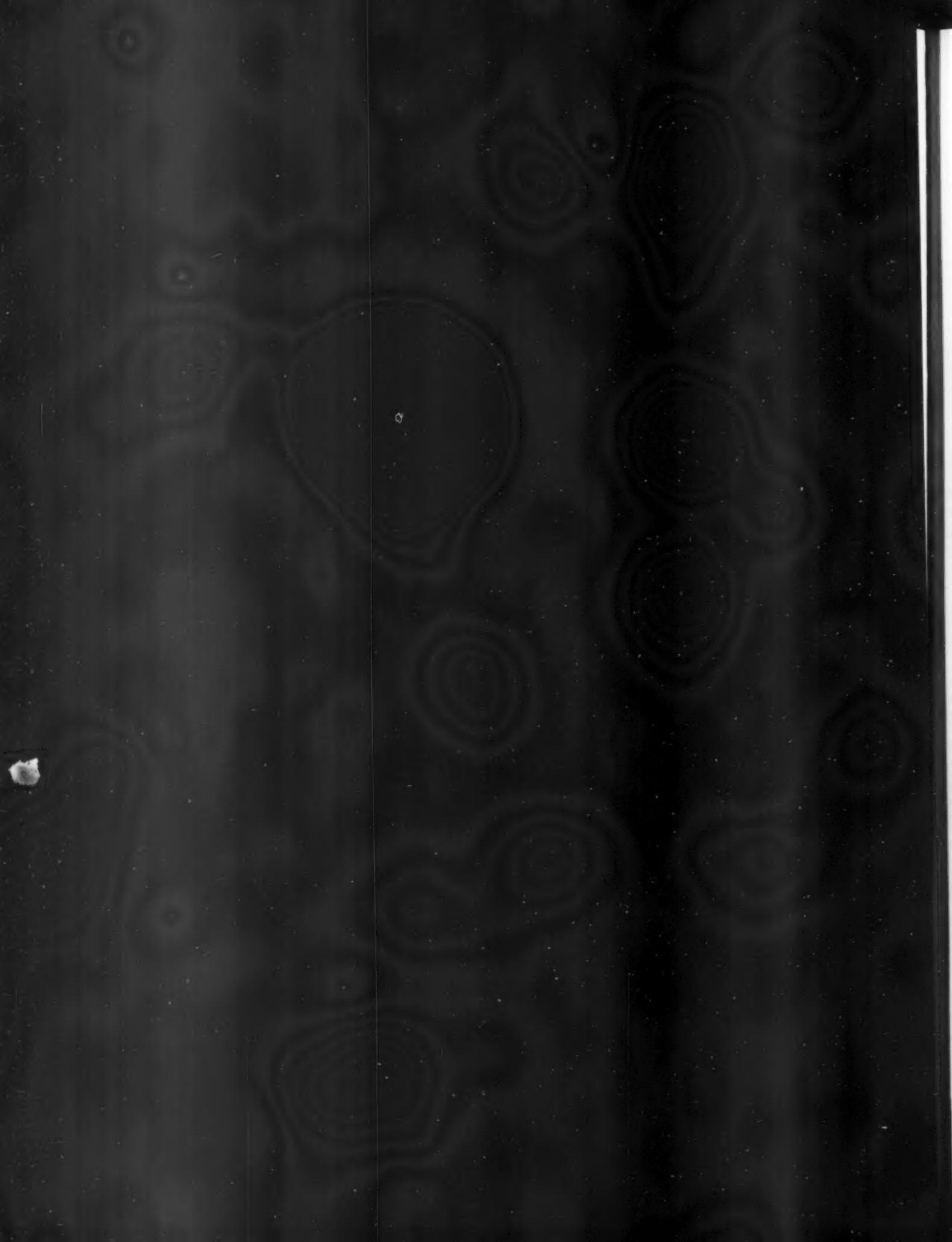
TRUCKS

FOR EVERY PURPOSE

ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY...IF YOU PLAN TO GET ONE, YOU'RE WISE!



Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

September 1, 1942

Dear Subscriber:

New York City: War bonds of Series F and G are recommended as an excellent means for investment of reserve funds for industry's post-war reconversion costs, by Henry H. Heimann, of the National Association of Credit Men. Series F and G bonds are well-adapted for investment of corporate reserves since the maximum holding can be as high as $100,000 annually for the aggregate of the two series. Either of these series can be registered in the name of a corporation, which is not the case with series E bonds. Thus post-war reconversion costs can be anticipated and funds to meet them can be invested safely.

Philadelphia, Penn.: Total revenue of the Pennsylvania Turnpike in June was under the total for the preceding month and down sharply from June, 1941. The Turnpike Commission report shows total revenues of $189,540. This compares with total revenues of $211,344 in May and $281,966 in June, 1941. A total of 125,958 vehicles used the highway during June, yielding $179,086 in revenue, compared with 145,646 vehicles and $200,620 in May and 252,276 vehicles and $258,420 in June, 1941. Revenues from concessions in June amounted to $10,453 against $10,724 in May and $23,546 in June, last year.

Allentown, Penn: A big producer of ready-mixed concrete in the East took advantage of a heavy war production year in 1941 to educate its salesmen for the future. Every fourth week the salesmen took a turn in the dispatcher's office where they had a chance to get in on the service end of the business. The plan worked out very well and was taken graciously by the salesmen. They had an opportunity to help out where help was needed most and, it is hoped, will have a better appreciation of the problems of operating a fleet of concrete mixer trucks when inclined to make unreasonable promises to prospective customers in the future. These same salesmen put in a lot of time calling on their old customers to build good will. They served as the go-between the company and the customer, to explain just how and why war orders were responsible for delays and other inconveniences in deliveries to these customers. These good-will calls were considered invaluable in holding friendly relations with regular consumers who sometimes had to be neglected.

Asheville, N.C.: Production of sheet mica is being boosted sharply in western North Carolina since organization of the Colonial Mica Corp., which is an agency of the Metals Reserve Corp. The purpose of the corporation, which also has offices in Newport, N.H., is to stimulate the mining of mica for war uses. Machinery is supplied on a lease arrangement to mines that are approved, technical advice is furnished and a market is provided by the corporation at fair prices. Many mines are being opened as a result of its activities. Mica is needed for radio and television equipment and for spark plugs, to mention a few war uses. It is said that 15 lb. of mica goes into the construction of an airplane.

Washington, D.C.: Misguided enthusiasts are going too far in their search for scrap metal, according to reports reaching the office of Secretary of the Interior Harold L. Ickes. It seems that valuable and non-replaceable mining machinery in workable or repairable condition has been picked up and destroyed for scrap in the salvage drive. Instances were reported where kiln equipment, crushers, ball mills, etc., were being scrapped. Secretary Ickes has made it clear that "every piece of usable or repairable mining equipment is absolutely vital because it cannot be replaced" and has demanded that every piece of usable equipment be protected. Salvage campaign officials have been instructed not to pick up mining machinery unless its release is approved by Bureau of Mines engineers.

Schenectady, N.Y.: Overmotoring a plant is one practice, wasteful of critical materials, that is stressed in the General Electric Co. campaign to point out how materials can be conserved and motor production increased through the selection of motors closer to their ratings for specific jobs. Because of "overmotoring" up to 25 percent more material and labor are now going into the production of motors than is needed according to a recent statement by L. A. Umansky of General Electric. It is recommended that motor sizes be selected on the basis of the actual expected duty and that the piling up of safety margins be avoided to conserve copper principally.

Indianapolis, Ind.: Indiana's famous limestone industry around Bloomington and Bedford is staging a comeback, not in making building stone but by adapting itself to war manufacture. Several of the companies have war subcontracts for machining tank axles, welding hulls, etc. and more are scheduled to convert their plants to war work. Some of the machinery formerly used to cut limestone blocks can be used on tank work but other machinery is needed too. One mill is being converted into a foundry and machinery from another has been shipped to an eastern shipbuilding company. Without this temporary "shot in the arm," the industry was slated for some dark days.

Washington, D.C.: Effectiveness of efforts to conserve tires, gasoline and motor vehicles is indicated by sharply reduced gasoline tax collections, according to Public Roads officials. In June, 1942, the collections dropped 17 percent for 26 states as compared to those for June, 1941. Reductions were as high as 31 percent in Rhode Island which is in the gasoline rationing area. A study has revealed that many people no longer use cars for non-essential purposes which is offset, in part, by increased gasoline consumption for transporting war workers and freight for war industries.

Youngstown, Ohio: A number of steel companies are working over old slag dumps to recover scrap to help keep their open hearth furnaces going. Carnegie-Illinois Steel Corp., for one, hopes to recover 50,000 tons annually from slag dumps, with outside contractors hired to prepare and ship the scrap to the furnaces. Most of the scrap consists of the chunks of metals which hardened with the slag in the vessels, or metal which spilled over. Republic Steel Corp. is "mining" a number of slag dumps in the Youngstown district.

New York, N.Y.: The British Admiralty has constructed a large number of concrete barges, from 180 to 200 tons carrying capacity, that have withstood grueling tests for seaworthiness and watertightness. The hulls are of pre-cast slabs connected by means of stiffening members cast-in-place, with reinforcing steel to bind them together. During the last war four concrete carriers were built by the United States Shipping board. Since then, the water-ratio theory of concrete design gained universal acceptance and far superior concrete is available than was used in 1918.

The Staff



IMPORTANT BENEFITS OF

POZZOLITH (Cement Dispersion)

DEMONSTRATED IN . . .

millions of yards of concrete.

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✓ *LOWER COSTS*

✓ *BETTER CONCRETE* **LOWER MAINTENANCE COSTS**

Are you interested in concrete which unloads faster and cleaner and has the four construction advantages given above? Would you like to know how leading transit-mix companies are reducing the cost of concrete 15 to 30 cents per yard?

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CLEVELAND, OHIO **TORONTO, ONTARIO**



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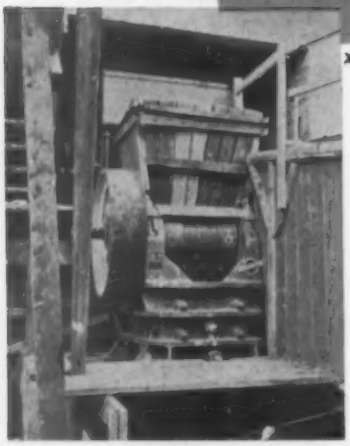


250 TONS PER HOUR

Keeps War Construction Moving

Crystal Concrete Co. of South Braintree, Mass., has another Telsmith gravel plant. This new one, near Weymouth, was erected solely to supply war projects. Production was started at the rate of 175 tons per hr. After a short "breaking-in" period, regular production will go up to 200 to 250 tons per hr. In the pinch . . . when win-the-war work calls for top speed and peak production . . . experienced operators depend on Telsmith equipment. You can, too. It will pay you to get Bulletin G-11.

TELSMITH





Telsmith 18 x 30 Roller Bearing Jaw Crusher (left) handles plus 3¼″ material. It is fed by Telsmith 30″ x 5′6″ Reciprocating Plate Feeder over a Telsmith No. 450 Rotary Grizzly with 3¼″ spaces. Feeder takes raw bank material from 15 cu. yd. hopper fitted with a rail grizzly to reject the few oversize boulders. Crushed material, and minus 3¼″ from Rotary Grizzly are conveyed to scalping screen (lower left).

Telsmith 4′ x 10′ Single Deck Pulsator (lower left) acts as a scalping screen. Minus 2″ throughs go to finished product conveyor; plus 2″ oversize into Gyrasphere Crusher (right).

Telsmith No. 36 Gyrasphere (upper right) crushes oversize or plus 2″ fed to it from the Telsmith Scalping Screen (left). The crushed product is returned to the 30″ x 87′ primary conveyor by an 18″ x 48′6″ belt conveyor.

Telsmith 5′ x 12′ Triple Deck Pulsator (right) in structure over storage piles, sizes the gravel and sand. The 3 sizes of washed gravel are deposited over tunnel at grade level for truck loading from live storage, or by loader outside stock piles. The sand is flumed to a No. 8 Telsmith Sand Tank independent of main structure, for stock piling. 6-9





SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

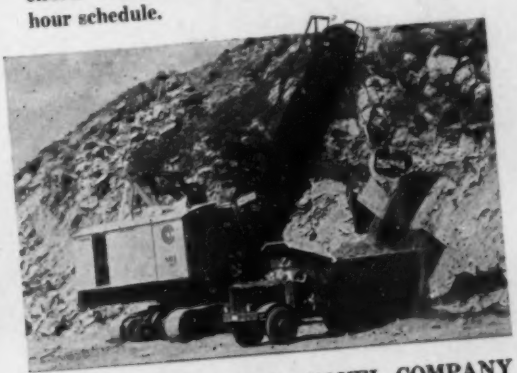
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So That Free Men May Rule the Skies

"Production and more production" is the battle cry of a free people. They know complete security rests with production supremacy—ability to out-produce the Axis.

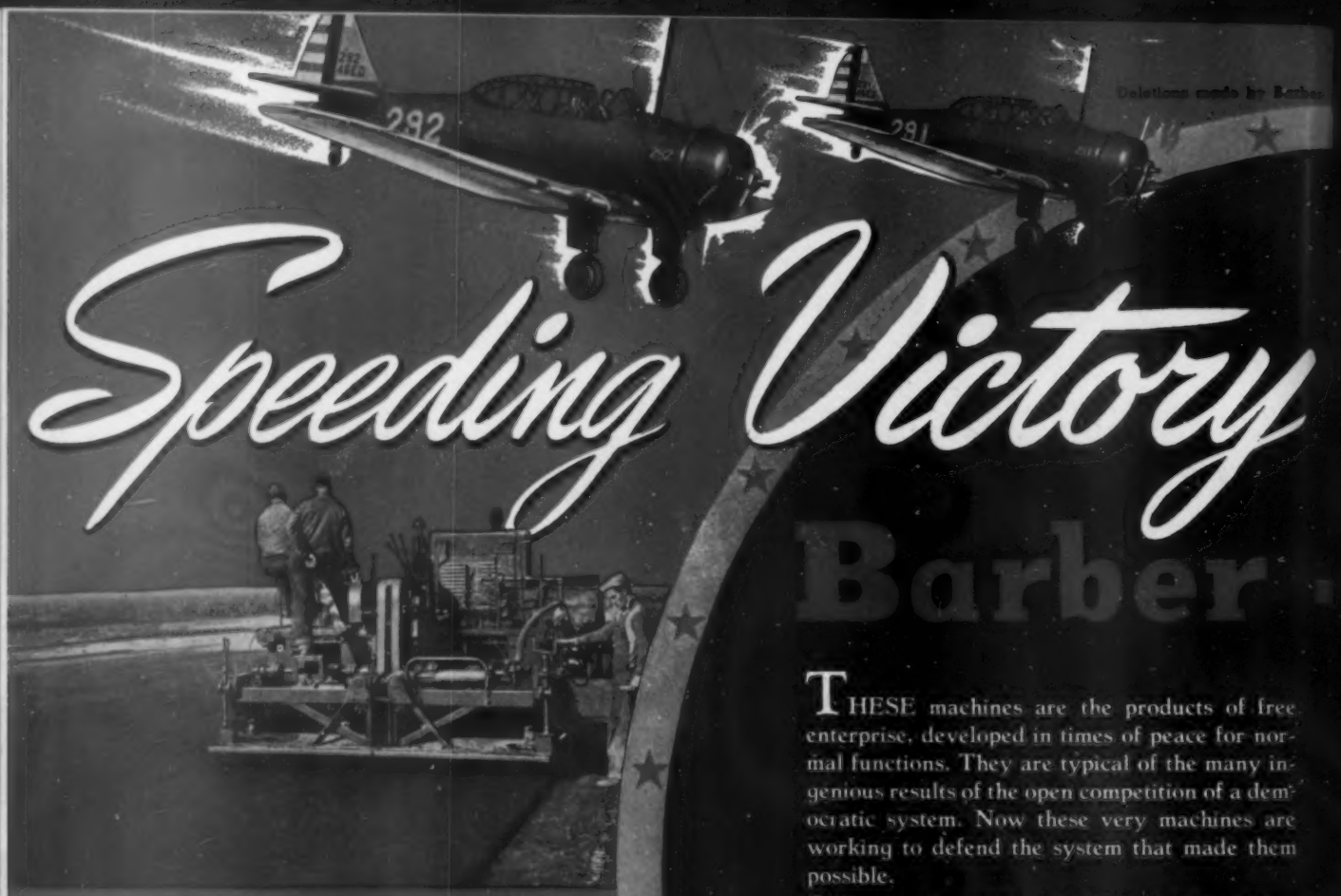
Marion shovels are playing a vital part in keeping the Nation's assembly lines working at top speed. Their jobs are in the quarries and mines, digging critical raw materials and keeping them moving to the many construction and production fronts in an endless stream, and the building of projects essential to the war effort. This they are doing on a twenty-four hour schedule.



THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A.
Offices in all principal cities
Serving industry since 1884

MARION

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • PULL-SHOVELS • WALKERS
Gasoline—Diesel—Electric—¾ cubic yard to 35 cubic yards



Speeding Victory

Barber-G

THESE machines are the products of free enterprise, developed in times of peace for normal functions. They are typical of the many ingenious results of the open competition of a democratic system. Now these very machines are working to defend the system that made them possible.

There is much more to defense than munitions . . . the building of camps, airports, roads, igloos

BARBER-GREENE COMPANY

B-G FINISHER laying runways for [illegible] Airport, [illegible]. The B-G Finisher revolves the asphalt mix from trucks, evenly spreads it, compacts it to a uniform density, and automatically lays a level surface even over an irregular sub-base.



B-G PORTABLE CONVEYOR placing earth behind concrete lining where the chute will be moved. This saves time, saves labor, saves money. Many other uses in sand, gravel, and quarry plants, and many other fields of activity in the defense program.



B-G SNOW LOADER

B-G TRAVEL PLANT

B-G "GOOSENECK" COAL LOADER. Many of these machines are being used for handling coal at the U. S. Government Camps. This B-G Loader also loads the car and is admirably adapted for many other uses.



B-G CAR UNLOADER. Many of these Barber-Greene are being used for handling coal at the U. S. Government Camps. This B-G Unloader also loads the car and is admirably adapted for many other uses.





Greene Company to comply with current censorship

...with Greenes

—a thousand major products—requiring almost every commodity used in our normal life—now required in a sudden rush of multiplied quantities. The ingenuity and unequalled efficiency of American products combined with the American spirit is responsible for the rapid progress of the defense program—a spirit that is showing the difference between being pushed together, and pulling together.

AURORA, ILLINOIS, U. S. A.

B-G PERMANENT CONVEYORS

B-G DITCHER

B-G BUCKET LOADER

B-G COAL LOADERS

B-G BITUMINOUS CENTRAL PLANT

ELECTRIC MOTORS ARE BUILT WITH EXTRA RESERVES OF POWER FOR EMERGENCIES....

use EMERGENCY motor power now!



In peacetime, motors are applied with a substantial reserve safety factor. In other words, most applications are "overmotored" . . . the motors are capable of producing more horsepower than is required by the machines they drive.

Such "overmotoring" provides a reserve to take care of unexpectedly heavy loads, and assures long life with low maintenance cost.

But today, our problem is to "make the most of what we've got"—to get more production out of each and every motor.

Recognizing this fact, Westinghouse, at the suggestion of the War Production Board, now recommends that motor users modify their peacetime practices . . . that they get the most out of every motor they have . . . that in applying new motors or relocating old ones, they take advantage of all possible favorable operating conditions . . . that they load each motor to the limit.

A summary of these recommendations is presented in the booklet "Calling All Horsepower," illustrated above. Ask today for your free copy. Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., Dept. 7-N. J-21250

Westinghouse

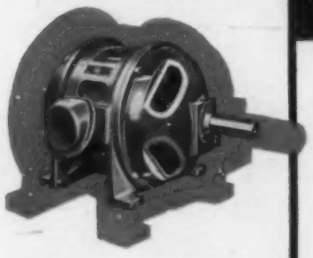
THE WESTINGHOUSE "CALLING ALL HORSEPOWER" PROGRAM IS DESIGNED TO:

- **Get maximum production out of every motor.**
- **Save critical materials.**

The program has as its basis close teamwork between industry and Westinghouse engineers, aimed at determining with maximum accuracy the exact horsepower required by the driven machine.

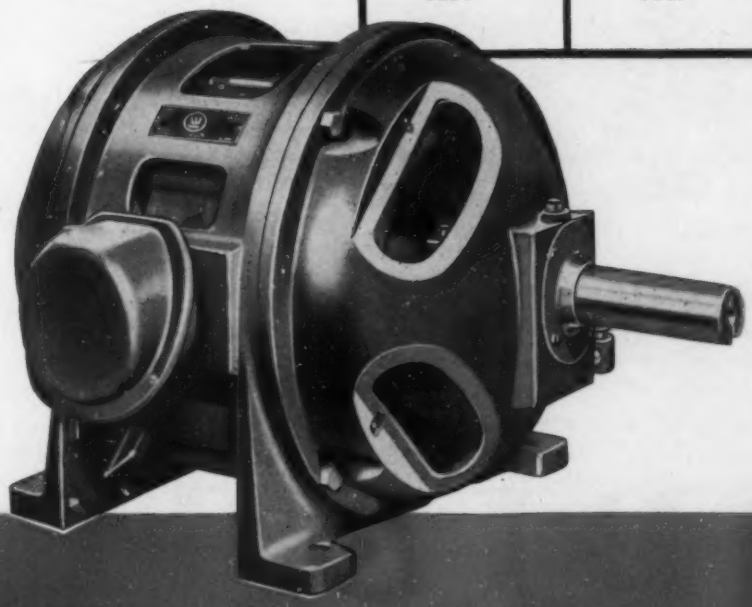
In keeping with these findings, it then offers specific recommendations which will enable users to take advantage of (1) all favorable operating conditions; (2) extra service factors built into Westinghouse motors. Some typical results possible with this program are shown in the table below.

OPEN TYPE A. C. MOTORS



40°C rated, in applications seldom reaching or exceeding this temperature.

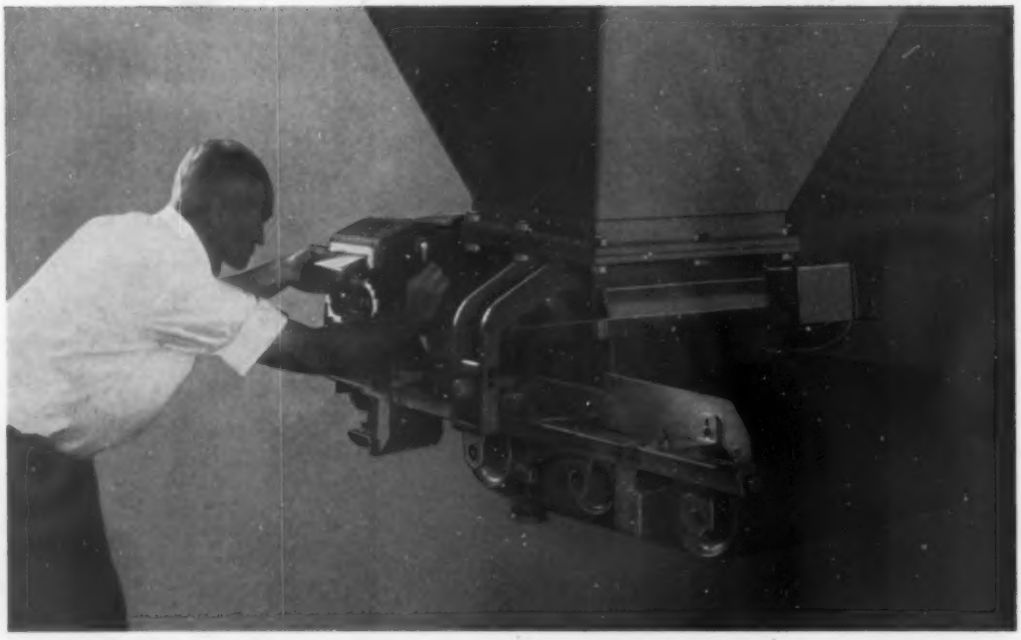
for THIS LOAD	*use* THIS RATING	*instead of* THIS RATING	*save these* MATERIALS
hp	hp	hp	lbs.
1.25	1.	1.5	36
1.88	1.5	2.	14
3.75	3.	5.	19
6.25	5.	7.5	63
9.38	7.5	10.	80
25.0	20.	25.	106
37.5	30.	40.	186
62.5	50.	60.	320
125.	100.	125.	550



STANDARD WESTINGHOUSE MOTORS ARE GENERALLY AVAILABLE FOR PROMPT DELIVERY FOR WAR JOBS

Motors and Control

WESTINGHOUSE



HARDINGE CONSTANT WEIGHT FEEDER

An accurate and dependable feeder for feeding by weight.

Made in five sizes with capacities from 1-lb. per hour to 1000 tons per hour. The conveyor belt is driven through a variable speed drive with a 3 to 1 variation in capacity. The counter weight on the gate arm permits considerably greater capacity range when desired.

When equipped with the no-load cut-off attachment, a signal light or bell indicates an empty bin or material hanging in bin and stops the feeder.

For proportioning two or more materials, the feeders may be interlocked. If one feeder is stopped or one bin becomes empty, all feeders stop and the warning signal operates.

The "Feedometer," a weight and rate indicating feeder, indicates the rate of feed and totalizes the amount fed. This feeder operates on the constant weight principle.

Partial List Of Materials Fed With This Feeder— —

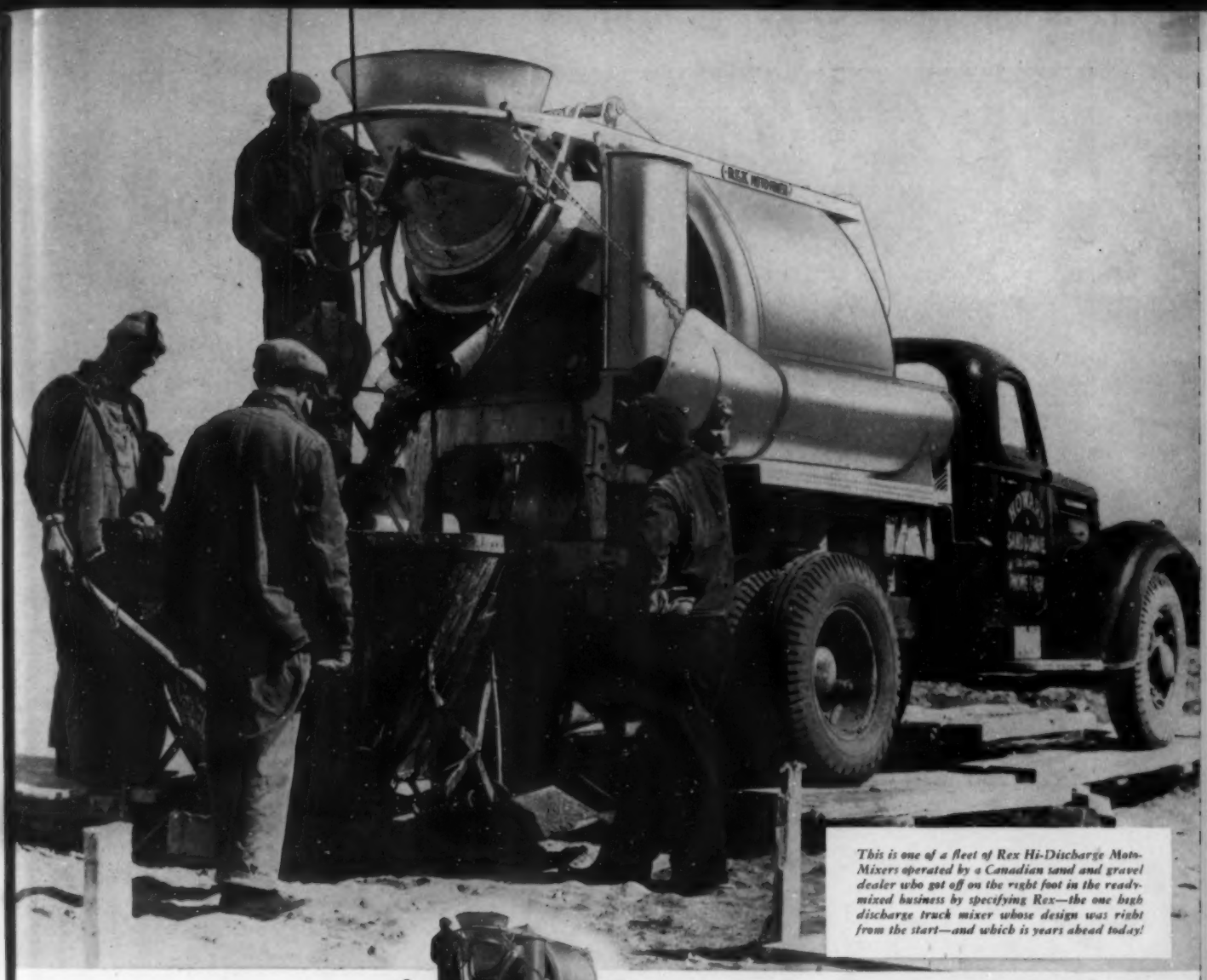
Borax
Carborundum
Cement Clinker
Coal
Coke
Dolomite
Ferro-Chrome
Fertilizer
Gypsum
Iron Ore
Lime
Limestone
Pigment
Salt
Silica Sand
Soda Ash
Sodium Silicate
Talc

Write for Bulletins 33-C and 43

HARDINGE

COMPANY, INCORPORATED - YORK, PENNSYLVANIA

122 East 42nd Street, New York, N. Y.
205 West Wacker Drive, Chicago, Illinois
501 Howard Street, San Francisco, California
200 Bay Street, Toronto, Ontario, Canada



This is one of a fleet of Rex Hi-Discharge Moto-Mixers operated by a Canadian sand and gravel dealer who got off on the right foot in the ready-mixed business by specifying Rex—the one high discharge truck mixer whose design was right from the start—and which is years ahead today!

RIGHT! From the Start!



If you're considering adding truck mixers to your fleet—or if you're thinking of buying your first—we suggest you consider this:

TWO years ago, Rex Hi-Discharge Moto-Mixers introduced an end-charging design that was a great improvement over any other on the market—a feature that has proved itself thoroughly in the field, and which has never required changing. During this time, others have come to look to this Rex end-charging hopper as a model for their own! Consider, too, the other Rex features:

There is the Rex Hi-Lo mixing action, which in the Rex live drum means over 50% faster mixing, without "balling" or "dry-coring." There is the Rex visible mixing feature which saves inspection time—important during these days when specifications are more and more rigid. There is the Rex accurate water system—all-weather—fully enclosed against freezing.

There are other features, equally important. See the Rex man or write for the catalog, "Rex Hi-Discharge Moto-Mixers." Address: 1649 W. Bruce Street, Milwaukee, Wis.

REX **MOTO-MIXERS**

HI-DISCHARGE AND HORIZONTAL TYPES

CHAIN BELT COMPANY OF MILWAUKEE

ALL THE Same DRILL!



DR30 drills a flat hole 8 feet above ground level.



Set for drilling a low, flat hole.



Set for drilling a high hole, angling upward.

THE varied positions taken by the DR30 machine illustrated here are only a very small part of the settings possible with this latest Cleveland wagon drill. The DR30 has the double screw U-bar jack — the recoil device (it increases cutting speed) — the improved centralizer — the forward leg point, to steady the drill — all the important features of the older designs, with the improvements that make the Cleveland DR30 the most popular wagon drill ever built. • Ask for new Bulletin 132 — just off the press. It tells the whole story.

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THE CLEVELAND ROCK DRILL CO.

3734 E. 78th STREET CLEVELAND, OHIO

★ ★



Cleveland DR30 has a "slabback" mounted drifter, double screw U-bar.



Note how the wheels can be swivelled.



Another position of the wheels and drill.

Symons Screens

• FOR ALL MATERIALS

• MORE ACCURATE SIZING

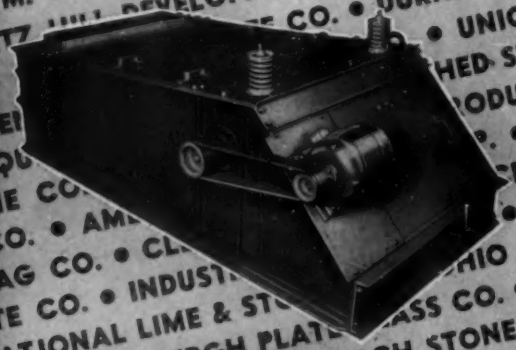
• INCREASED CAPACITY

ORE
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COAL
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SIZING
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WET CLASSIFICATION











NORDBERG MFG. CO.

MILWAUKEE WISCONSIN

NEW YORK · LOS ANGELES · LONDON · TORONTO

NORDBERG MACHINERY

TO EXECUTIVES:

NOW YOU CAN HELP

Even More...

New Treasury Ruling Permits Purchases UP TO $100,000, in any Calendar Year, of Series F and G WAR BONDS!



The Treasury's decision to increase the limitations on the F and G Bonds resulted from numerous requests by purchasers who asked the opportunity to put more money into the war program.

This is not a new Bond issue and not a new series of War Bonds. Thousands of individuals, corporations, labor unions, and other organizations have this year already purchased $50,000 of Series F and G Bonds, the old limit. Under the new regulations, however, these Bond holders will be permitted to make additional purchases of $50,000 in the remaining months of the year. The new limitation on holdings of $100,000 in any one calendar year in either Series F or G, or in both series combined, is on the cost price, not on the maturity value.

Series F and G Bonds are intended primarily for larger investors and may be registered in the names of fiduciaries, corporations, labor unions and other groups, as well as in the names of individuals.

The Series F Bond is a 12-year appreciation Bond, issued on a discount basis at 74 percent of maturity value. If held to maturity, 12 years from the date of issue, the Bond draws interest equivalent to 2.53 percent a year; computed on the purchase price, compounded semiannually.

The Series G Bond is a 12-year current income Bond issued at par, and draws interest of 2.5 percent a year, paid semiannually by Treasury check.

Don't delay—your "fighting dollars" are needed *now*. Your bank or post office has full details.

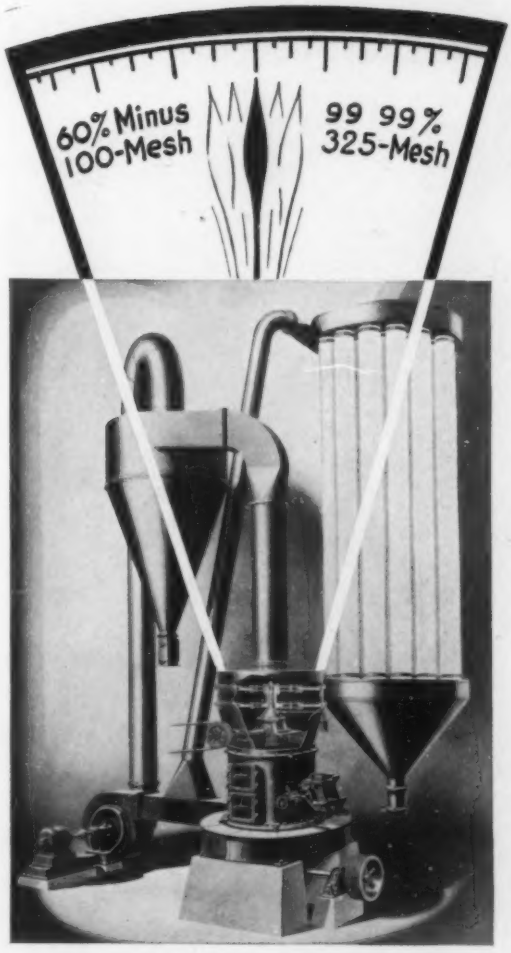


Save With . . .

War Savings Bonds

This space is a contribution to America's All-Out War Program by

ROCK PRODUCTS



WIDE RANGE FINENESS CONTROL

with....

RAYMOND
Double Whizzer Type
ROLLER MILL

Custom Grinding . . . . .

Improve your mill output by installing a Whizzer Type Separator on your present Roller Mill

Ask for details

If you have a special problem in drying and grinding, write us for information.

Where you need to make quick changes in classification . . . as in pulverizing different products or making various grades of material in the same mill . . . you can get close fineness control within wide limits by the use of the RAYMOND Double Whizzer Type ROLLER MILL.

All the way from 60% minus 100-mesh up to 99.99% through 325-mesh . . . simply by shifting a hand lever on the variable speed control unit, which regulates the fineness by changing the whizzer speed.

This modern equipment is economically adapted to the grinding of gypsum, limestone screenings, clay, talc, kaolin, bauxite, barytes, pigments and chemicals.

Products with surface moisture may be dried and pulverized in one operation by introducing heated air into the mill. Another optional feature is a throw-out attachment for rejecting impurities where high purity is desired.

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street, CHICAGO
Sales Offices in All Principal Cities
Canada: Combustion Engineering Corp., Ltd., Montreal



MORE TRIPS PER HOUR

Shuttle operation on narrow haul roads saves turning time. Koehring Dumptors travel forward or reverse at same speeds ... are spotted easily and close to loading unit ... *SAVING SECONDS EVERY TRIP.* Rock or dirt is loaded, hauled and dumped at speeds which cut seconds from every operation. Seconds saved every trip, increase trips per hour ... yardage per shift. Koehring Dumptors have the war speed so vital today for essential military construction projects.



Instantaneous Dumping

DUMPTORS DUMP ROCK OR DIRT INSTANTANEOUSLY SAVING SECONDS EVERY TRIP . . . INCREASING TRIPS PER HOUR.

KOEHRING COMPANY
MILWAUKEE • WISCONSIN

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

"Here's how you can help spot the 'criminals' that steal wire rope life...



Look for them regularly... to save your time and money... and America's steel

"IF YOU WANT to get every hour of safe service that's built into your ropes, tell your maintenance men to get up on the cranes and shovels regularly . . . up where the wire rope operates. Tell them how to inspect it . . . how to look for the clues to what is damaging your wire rope and how to establish *your own standards* for deciding when it's necessary and economical to replace your wire ropes.

As a first step, tell them a rope should be judged by the condition of the most severely damaged lay . . . one rope lay being that length of rope in which one strand makes one complete revolution around the rope...



And to select the worst lay, make a counting of the broken wires. Watch to see if the breaks are concentrated in one or two strands. If this is the case, the rope will be considerably weaker than if they are evenly distributed.

You'll probably find some breaks caused by *Abrasion.* In extreme cases they look like this . . .



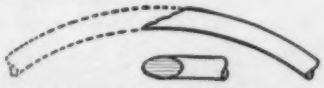
and even when not worn through, any removal of metal due to wear weakens the rope in direct proportion. Abrasion breaks occur most frequently where rope goes over sheaves and drums.

There may be breaks caused by *Fatigue* which look like this . . .



and occur where the rope has been bent around too small a radius too often or has been subject to vibration or whipping. Fatigue breaks also occur after the wire has been damaged by *Corrosion* which shows up as pitting on the surface of the wire. Improper lubrication is to blame and contributes to tension and abrasion as well.

There may be breaks caused by *Mechanical Abuse.* This cut or gouged wire is one example . . .



Careless handling during installation or an accident on the job may cause cut wires like this or mashed wires with flattened or spread ends. Mechanical abuse sometimes may so weaken the wire that it will fail in tension.

Finally, if there are breaks caused by *Tension* they will look like this . . .



And will show one side of the broken wire cupped and the other coned. Tension breaks are always caused by an overload on the wires, which may or may not have been weakened by abrasive wear, by corrosion, or by mechanical abuse. When tension breaks are found, it is usually obvious that the rope is unfit for further duty and in any event should be discarded.

As a last step, have a record kept of the condition and the service life of each wire rope, cut out the worst section when the rope is taken off and send it on to the manufacturer for an ultimate strength test. This will complete your inspection record and form a basis for future inspection and condemnation decisions.

Then, you'll be on the way to getting the maximum useful rope life built into every inch of Roebling "Blue Center" Steel Wire Rope—without taking chances on untimely and dangerous breakdown of equipment vital to wartime production schedules."

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches and Warehouses in Principal Cities

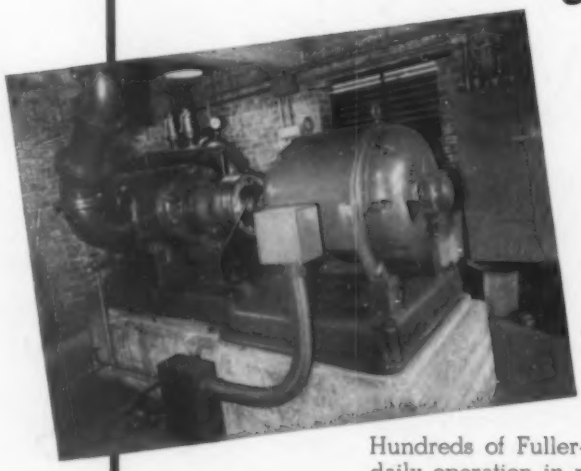
★ PROMPT SERVICE
★ on essential orders from warehouse
★ stocks or mill



ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

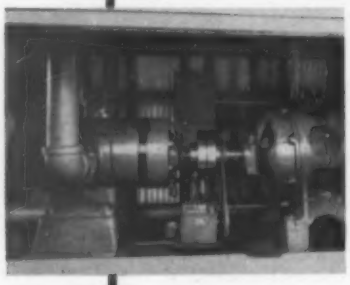
FULLER-KINYON PUMPS and FULLER ROTARY COMPRESSORS

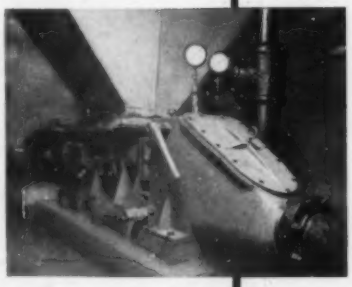
Do the Job Best!





Hundreds of Fuller-Kinyon Systems are in daily operation in many and varied industries: chemical, cement, steel, ready-mixed concrete and asphalt plants. On this page are illustrated a few of these systems operated by ready-mixed concrete plants . . . Fuller-Kinyon Pumps for unloading and conveying bulk Portland cement from hopper-bottom cars and barges. These plants also take advantage of the adaptability of Fuller Rotary Compressors for such applications because, they're economical in operation and supply air when and where you need it, and at pressures to do the work most economically.





FULLER COMPANY

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G-27

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS

2-CYCLE DIESEL

It's Husky! It's Sturdy! It's Tough!

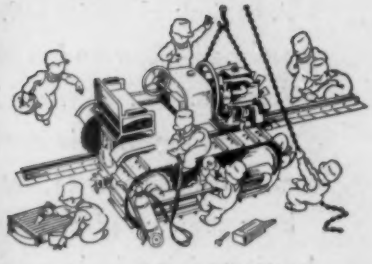
It's the most outstanding Diesel in the construction industry, this hard-hitting, double-powered, 2-cycle engine. It "packs a real wallop" that carries it through the toughest going — it gets in there and lugs where ordinary engines stall—and it keeps on purring along without constant nursing and attention, a full sixty minute hour . . . 24 hours per day . . . if necessary.



Service records indicate thousands of hours of operation without overhauls or major repairs on tough, three shift jobs. That's the kind of service Allis-Chalmers tractor owners are getting from their 2-Cycle Diesels. It's the kind of performance that gets jobs finished on time and at less cost — the kind of performance you've always wanted in a tractor engine — the kind of performance only a 2-Cycle Diesel can give you.

If you are not already a 2-Cycle Diesel owner, it will pay you to check up on this modern power. Be prepared for the future. Write for complete information.

COMPLETE RECONDITIONING SERVICE!



You can add hundreds of working hours to the life of your old machines by letting your Allis-Chalmers dealer repair or rebuild them. He has the right tools, the skill and service facilities to do an A-1 job.

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

2-Cycle THE MODERN DIESEL POWER



A century of service—through peace and war—in good times and bad—Ryerson has served the rock products industries of America. Ten Ryerson Plants are strategically located for prompt, dependable steel-service. Our steel stocks, which normally contain over 11,000 different kinds, shapes and sizes, have been greatly reduced by the demands of the war. However, our remaining stocks are offered in accordance with the Government Priority Plan. We are always glad to work with you and offer our help in the most effective application and fabrication of all steel products.

Partial List of Ryerson Steels

Bars—Plates
Structurals
Sheets—Strip
Alloy and Tool Steels
Stainless Steel
Tubing
Reinforcing Bars
Welding Rod

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MUST BE GAMBLERS TO WIN

A FRIEND who has had to make some Washington, D. C., contacts tells us of a man fairly important in the New Deal war administration whose attitude toward business and business men is particularly nasty. Our friend took the trouble to find out some of this chap's background. It seems he was a bright youngster who went to college on his own savings and aimed to become a professional man. His money was giving out and unless he found a way to increase it, his prospects of completing a professional education were not so hot. This was back in 1929 when "everyone" was making "easy money" by simply buying stocks low and selling them high. So, our New-Deal-to-be friend decided to raise his educational fund by this process. He invested his last few hundred dollars in some stock, the promoter of which promised several hundred percent return—and the bottom dropped out of the market! Ever since then he holds "Wall Street" and "business" responsible for the frustration of his life's ambition.

We think that this is probably more or less typical of some of the most ardent New Dealers. Not only have they never had successful business experience, but their contacts, such as they were, with business and industry have been unfortunate. They are perhaps college professors and not too successful lawyers who have suffered by making unfortunate "investments," and consequently are soured on the whole system of "private enterprise." They have the unreasoning antagonism that comes from frustrated early ambitions. They are not and never were gamblers by nature, and consequently they are hard losers.

Business men have to be gamblers—in the sense that they must make up their minds whether or not to take chances; and when to take them. Probably no business ever became successful without taking many chances; and many a business has failed utterly because it did not take a chance, or the timing was wrong. Therefore, the education of a business executive is largely that of acquiring judgment and horse sense by which his gambling instincts are directed more or less intelligently. If a business man loses, it is part of "the game" and he does not gripe about it to the end of his days; he trys to use the experience gained and his talents for a comeback.

Consequently business executives and New Deal "visionaries" mix like oil and water. The visionary wants a planned economy where every one (but primarily himself) will be secure. The business man knows that such a thing as "collective" attainment of individual security does not exist. Life itself is an individual gamble against disease germs, accidents and the speed of bodily disintegration, which are affected by many factors, some within the individual's control and others not. He knows that if his individual security depends on someone else's effort, there will be no security for anyone; for "what is everyone's business is nobody's business."

The business man's approach to "collective security" is through every one's looking out for his own. If every one does that there will be security for all. The theorist's approach is from the opposite angle—that by some obscure method society can attain security for itself without any one's individual effort. Obviously, to any but an idealist or theorist, no group in government, however intelligent it may regard itself, can adopt regulations that will meet and act on the millions of individual issues, or gambles, that beset the millions of business executives.

Our government at Washington is like the board of directors of a business corporation. A great deal of the successful progress of the corporation may be due to some "visionary" officer or director. But the visionary must be practical enough to sell his idea to the board; and the president of the board, or the chief executive of the corporation, must employ capable "go-getters" to "put over" the idea. It has to be "sold" all the way along the line.

There is no basic reason why government theorists and business executives cannot get along together if each recognizes the talents and limitations of the other. No one can deny the desirability of establishing world-wide, "the four freedoms," for example. No one can deny the desirability of preserving them in this country. However, they are not going to be established or preserved without taking huge gambles.

For one, we would like to see men in the seats of the mighty in Washington who know how to gamble intelligently. We would like to see men who concentrate on "the game," and are not too concerned with maintaining a certain political clique in office; or to put it more generously, men who are willing to gamble the future of these ideals, on the results they may produce, and not those men who pin their faith in their ideals to their own continuance in office. For if idealists really can "sell" their ideals, they need not worry about their place in history.

Nathan C. Rockwood

HINTS AND HELPS

Power, Capacity and Efficiency of Pumps

By W. F. SCHAPHORST

HERE is a chart that will be found useful for finding the horse power necessary to do almost any pumping job up to 100 h.p.; for finding the gallons of water a given pump will lift per minute; for finding the head; or for finding the efficiency of a given installation.

As an example, how many gallons per minute will be pumped by a 40-hp. motor through a 40-ft. head, the efficiency of the pump being 50 percent? Join the 40 (column A) with the 50 percent (column E) and locate the instruction with column C. Then run a straight line through that intersection (column C) and the 40-ft. head (column D) and the answer (1950 gal. per minute) is found in column B.

The principal point to remember is—always connect A and E; B and D. The two outside columns must be used together, and B and D must be used together.

It is plain, now, that knowing three of the values in A, B, D or E, the fourth one is easily and quickly found without any computing.

Whether the motive power is electric, steam, gas, oil, belt, or water, makes no difference. And it doesn't matter about the pump either — whether duplex, triplex, reciprocating steam, centrifugal or air lift.

When figuring efficiencies allow about 80 percent for duplex, triplex, and reciprocating pumps in general; a good modern centrifugal pump, about 60 per cent; and for air lift pumps, 40 percent is considered pretty good. Higher efficiencies than these have been and are attained with all of the above pumps, to be sure. If you know the exact efficiency of your pump or the pump you have in mind, so much the better. That is the efficiency to use in this chart, of course.

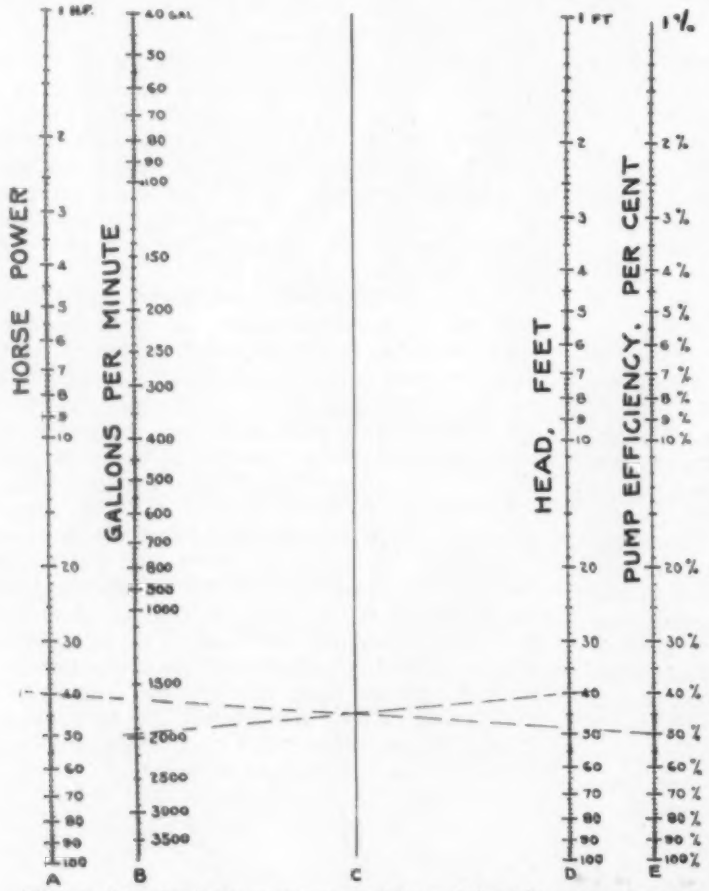


Chart to determine horse power required for pumping job, g.p.m., pumping head, etc.

Welding Simplifies Making Up Pipe

By W. E. JOHNSON

SINCE ELECTRIC WELDING has become so easy, and most shops have their own welders, pipe fitting problems are much more simple.

Ells, Y's and Tees are easily made, are less expensive than cast iron, and generally can be made with longer radii than the standard cast fittings, thus eliminating friction. Many men make pipe ells by guess, which necessitates a lot of cutting and fitting, and often results in a job that does not look well. Books on drafting give rules for laying out pipe bends and other cuts, but all shops do not have books on drafting, and many top notch mechanics are not draftsmen so I am going to explain this problem so that any good mechanic with a framing square, pair of dividers, and a protractor can lay out an ell.

The first step is to measure the outside diameter of the pipe. Get a piece of paper or sheet metal long long enough to go around the pipe, and preferably a few inches wider than the diameter of pipe. Lay out the circle A, the diameter being the same as the outside diameter of the pipe, at any convenient point near the middle of paper or sheet metal, and close to the top or far edge. Lay outlines 0, 3, 6, and 7. With dividers already set on radius, step off points 2 and 4 from point 0 on circle. Set one point of dividers on point 3 on circle and the other point of dividers on point 2 or 4 on circle, and step off points 1 and 5 on circle.

Lay out line B at right angles to lines 0, 3, and 6. Lay out line C at an angle of 11¼ deg. to line B. This is the angle of the pipe cut, which will be explained later.

Now from points 1, 2, 4, and 5 on circle, lay out lines 1, 2, 4 and 5.

Preparations may now be made to lay out the pattern. Take a tape or steel rule and measure around the pipe, or multiply the diameter by 3.1416, and lay out the lines D and E this length, about 3 in. apart, and parallel. Divide this distance into six parts and step off points 2, 4 and 6. From the center 0, set dividers on one-half distance between 0 and 2 and step off points 1, 3 and 5. From the line D, square off short lines from the points just stepped. Set dividers at 0 on lines B and C; that will be

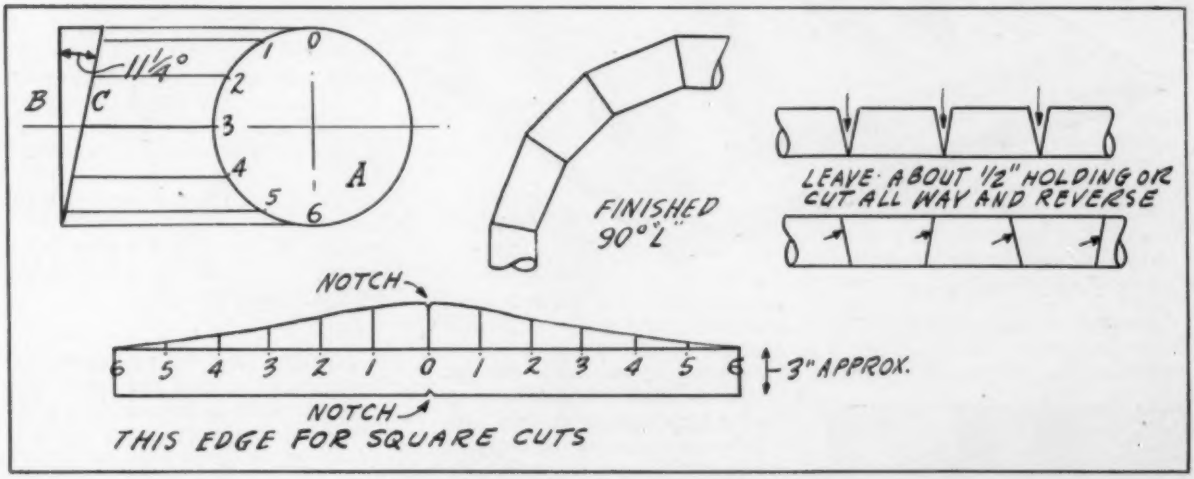


Diagram used as a guide in laying out pipe "bends"

the distance between lines D and F at 0 on pattern, and so on until pattern is complete.

In laying out this pattern, all lines and points should be marked as shown in the diagram, especially until the man doing the job becomes familiar with the problem. If pattern is laid out on sheet metal, cut it out with a pair of snips, marking the center line 0 with a small notch so it can be kept straight with the pipe you intend to cut.

The reason 11¼ deg. is used is that two cuts make a 45-deg. bend, four make a 90, and if you have an angle that is not regular you can use more or less cuts, leave one end square, or do most anything you want to with it. In making the cuts it is easier to leave about ½ in. holding and bending the strips, but it is not hard to cut all the way around and reverse the pieces. The distance between cuts can be anything to suit the radius you want. Patterns of this kind are very easily made, and one for each size of pipe should be kept in the shop if much of this kind of work is to be done.

Relining Tube Mill With Zinc

By WALTER B. LENHART

IN RELINING a ball or tube mill some operators "bed" the new liners in zinc. This metal also finds a use in re-setting parts to gyratory crushers.

Zinc when it gets to a temperature just under the melting point is very brittle and can be pounded to dust with a hammer. For that reason it cannot be melted efficiently in any rotary type melting furnace. Once the metallic zinc becomes a powder it is referred to as "blue powder," and to get the metal in this powder back to a liquid is practically impossible.

In melting zinc in an open ladel this oxidation takes place to a lesser degree. Heavy dross will form and that holds up an appreciable amount of metal. If at the time just before pouring a hand full of ammonium chloride (powdered sal ammoniac) is sprinkled over the hot dross, this chemical will "cut" the dross and allow a greater portion of the contained metal to become liquid. White but harmless fumes of ammonium chloride should issue from the flux ing action. This is a regular part of zinc melting practice in the large refineries.

At one of the California cement plants an old barrel lined with brick is used as a melting furnace. Oil is used for fuel which is carried in the tight barrel. Air pressure forces the oil to the burner in the furnace.

Ventilating Fan

KENTUCKY STONE Co., Louisville, Ky., at its Russellville, Ky., crushed stone plant, is using the wheel-mounted ventilating fan, shown herewith, to ventilate the areaways where gasoline trucks are being loaded by electric shovels. The mine is a typical drift mine being developed by the room-and-pillar system. A 7-ft. diameter Jeffrey Aerodyne fan turns on SKF pillow blocks and is driven through Gates Vulco belting at 575 r.p.m. by a 25-hp. electric motor.

Mounted on an old rubber-tired Chevrolet chassis, the fan unit is placed about 100-ft. from the workings and directed toward the shovel and trucks. Electric connections are made to lines dropped vertically into the mines through drill holes overhead. Present workings are about 700-ft. inside the mine entrance. Wind tunnels are generally used in other mines which are further developed.



Portable fan for ventilating drift mine

NEWS ABOUT PEOPLE

Lady Succeeds in Silica Sand Business

MERTIE A. DUNKIN, president and general manager of Silica Products Company, Inc., Guion, Ark., had the



Mrs. Mertie A. Dunkin

job of managing a silica sand business thrust upon her when her husband died in 1933, but she has come through with flying colors. Throughout Arkansas business men recognize her administrative ability, and in the silica sand industry they respect her judgment.

Mrs. Dunkin, a native of Arkansas, was born in 1907 of English, Scotch-Irish, and French descent. She finished Junior College in the Ozarks of Northern Arkansas, and attended Northeastern College in Oklahoma. In 1928 she married Damon D. Dunkin. Mr. Dunkin, a graduate of the School of Mines, Rolla, Missouri, founded the business at Guion, Ark., in 1923, and was manager until his death in 1933. A few months after his death, Mrs. Dunkin took over active management and has served as president and general manager since that time. Mrs. Dunkin travels extensively through several States in the Southwest in behalf of selling the company's product which is used extensively in the manufacture of glassware, although a large volume is sold to foundries. In 1938, the company acquired the silica sand plant at Everton, Ark., formerly operated by Everton Silica Sand Co.

Her home is at Little Rock, Ark., where her two daughters, Ida Kate, 13, and Della Mae, 10, attend school. Seventy people are employed at the two plants, but only one is a woman, the bookkeeper. Mrs. Dunkin has been a member of the National Industrial Sand Association for many years. In commenting on her career, however, Mrs. Dunkin said, "A lady in the industrial sand business" may make a unique story, but her life is not an easy one."

Bureau of Mines Appointments

JOHN J. FORBES, who has had more than 30 years experience as a mining engineer and an exponent of safety, has been appointed chief of the Bureau of Mines' new division which has been created to make secure the continued production of vital war materials from the Nation's mines, quarries, smelters, and allied mineral facilities. To assist Mr. Forbes, WILLIAM J. FENE, a mining engineer who has been with the Bureau for over two decades and who has been assistant to the chief of the Coal Mine Inspection Division will become chief of the Coal Mining Section of the Mineral Production Security Division, and SIMON H. ASH, former Bureau of Mines district engineer in the Pacific Coast region and for the last two and a half years district engineer in the eastern Pennsylvania region and adjoining states, has been named chief of the Metal and Non-metallic Mineral Mining Section.

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EUGENE D. GARDNER, supervising engineer of the Southwest experiment station of the Bureau of Mines at Tucson, Ariz., since 1925, has been appointed regional engineer in charge of the newly organized Central States office of the Bureau of Mines at Rolla, Mo., established to expedite the exploration and the development of strategic war minerals.

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STEPHEN M. SHELTON, Bureau of Mines metallurgist and an authority on the recovery and processing of manganese and other domestic ores, has been named regional engineer for the Eastern and Southern states, with headquarters at College Park, Md. He will operate under the supervision of Dr. R. S. Dean, assitant director of the Bureau of Mines.

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J. R. THOENEN, who is widely known throughout the sand and gravel and crushed stone industries, has been appointed district engineer for the States of Arkansas and Louisiana, with headquarters at Little Rock, Ark., in the recent reorganization of the Bureau of Mines, United States Department of the Interior. Mr. Thoenen was formerly senior engineer. His present activities will be mainly in accelerating the production of war minerals in his district.

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STUART R. ZIMMERLEY, expert in ore-dressing methods for minerals, has been made regional engineer of the Bureau of Mines', Salt Lake City, Utah, office, from which he will direct the expanded war-time program for that area to provide greater output of strategic and critical minerals from ten Western states. These changes in personnel have been made under the Bureau's new streamlined reorganization program.

From Coal to Blocks

GEORGE GOUIRAND, JR., manager of the Chartiers Cinder Block Co., Houston, Penn., whose new concrete block



George Gouirand, Jr.

plant is described in this issue, came to America from France in 1903 when he was six years old. He entered the first world war and is prominent in the affairs of the American Legion. The company was started on a modest scale in 1923 as a partnership. Mr. Gouirand bought out his partner in 1936 and has developed a business of large proportions. His plant is undoubtedly one of the finest in the United States.

Retires

C. E. THOMAS, production superintendent of the Ideal Sand and Gravel Co., Mason City, Iowa, for 27 years, has announced his retirement from the firm.

U. S. G. Changes

FRANK C. PICKARD, former secondary powder foreman for the Phelps Dodge Corp. at Morenci, Ariz., is now employed by the U. S. Gypsum Co., Midland, Calif., as production engineer. W. R. BURGOYNE has been promoted from works manager to supervisor of mines and quarries and transferred from Sweetwater, Texas, to Northfield, Ill. C. D. MICHAELSON, formerly assistant superintendent of mines for Patiño Mines and Enterprises, Llallagua, Bolivia, has been appointed works manager at Midland, Calif. WALTER E. REDMOND has resigned as board-plant engineer, Sweetwater, Texas, and has been employed by the American Cyanamid and Chemical Corp., Pottsville, Penn., as explosives engineer.

Appointed Manager

F. C. MALLERY, formerly production engineer at the lime plant of the National Gypsum Co., Luckey, Ohio, has been appointed manager, to succeed W. E. Hessman, who has retired.

In the Army

NEAL R. FOSSEEN, president of the Washington Brick and Lime Co., Spokane, Wash., now Lieutenant Fosseen, will be stationed at the San Diego marine base. He left in February for officers' school in Philadelphia and later attended quartermasters' corps school in Quantico, Va.

Heads C. P. Assn.

RUSSELL LIND of the Bellingham Concrete Products Co., Bellingham, Wash., has been elected president of the Concrete Pipe and Products Association. JOHN R. SHERMAN of the Yakima Cement Products Co., Yakima, Wash., was named vice-president, and F. M. KETTENRING, president of the Graystone Concrete Products Co., Seattle, Wash., was made secretary-treasurer. C. M. HOWARD will continue to serve as engineer for the Association.

Operates Gravel Plant

L. R. EARL is superintendent for Gates Construction Co. at the Santa Maria sand and gravel plant in the Santa Maria-Lompoc area. C. R. Bolter is chief operator.

With Bureau of Mines

HERBERT COON, superintendent, U. S. Gypsum Co., Port Clinton, Ohio, has resigned to accept a position with the Bureau of Mines, Pittsburgh, Penn.

With Wolverine

ROGER C. GLEASON, whose recent appointment as vice-president of the Wolverine Portland Cement Co., Coldwater, Mich., was announced in the August issue of ROCK PRODUCTS, is a graduate of the University of Michigan in chemical engineering, Class of 1924, and also holds a Master's degree from the same University. His past experience has been mainly with Johns-Manville products. For five years he represented Johns-Manville in the East and Middle West and for 13 years has conducted the business of the Wallfill Co. and the Insulating Equipment Co., both of Chicago. These concerns handle the Johns-Manville line of products. Mr. Gleason's home is in Evanston, Ill. J. Schaffner, formerly assistant comptroller of the Ohio Boxboard Co., has been made comptroller of the Wolverine organization.



Roger C. Gleason

Recognition

V. P. AHEARN, executive secretary of the National Sand and Gravel Association, is especially mentioned in W. M. Kiplinger's new book: "Washington Is Like That." The author says: "A few of the trade association men have become public figures and are recognized as leaders of thought in their own right. He then mentions five men, one of them, Mr. Ahearn. Certainly all of Vince Ahearn's many friends will agree with Mr. Kiplinger's appraisal. The conclusion of his chapter on "Trade Association Men" reads: "A new economy is bound to grow out of the ferment of these times. The way trade association executives and their members conduct themselves now will go far toward determining the position of trade associations in the post-war economy." Incidentally, the whole book is interesting reading—and should prove helpful in giving business men a better understanding of where we are headed for.

Joins Research Staff

T. C. MILLER, formerly chief chemist and engineer for the Gager Lime Manufacturing Co., Sherwood, Tenn., has joined the research staff of the Universal Atlas Cement Co. at Buffington, Ind., as a physical chemist. Mr. Miller is a recognized authority on lime and its physical properties, and has gained recognition for designing a special type of lime kiln which is being used now at Sherwood, Tenn., as well as many other plants in the South.

Heads Public Works

BAIRD SNYDER, assistant administrator of F.W.A., has been assigned to administer all public works projects under the Lanham Act and to supervise the seven Regional Directors with respect to non-federal construction assigned to regional offices, according to an announcement by General Fleming, F.W.A. Administrator and Acting Commissioner of W.P.A.

Elected President

ERIK THUNE, vice-president of the National Portland Cement Co., Brodhead, Penn., has been elected president to fill the vacancy caused by the death of William M. Richardson, president of the company.

Ready Mix Manager

D. B. STEWART has been placed in charge of the ready mixed plant of the Campbell Coal Co., Atlanta, Ga.

Ball Mills Ahead of Tube Mills

Medusa Portland Cement Co. getting best clinker grinding results with large mills in simple closed circuits with vibrating screens and air separation at Silica, Ohio

A GOOD EXAMPLE of the evolution in modern clinker grinding practice has been taking place at the Silica, Ohio, plant of the Medusa Portland Cement Co. Since 1936, there have been three complete mill changes, all of which were made to improve plant operating conditions as well as quality of products.

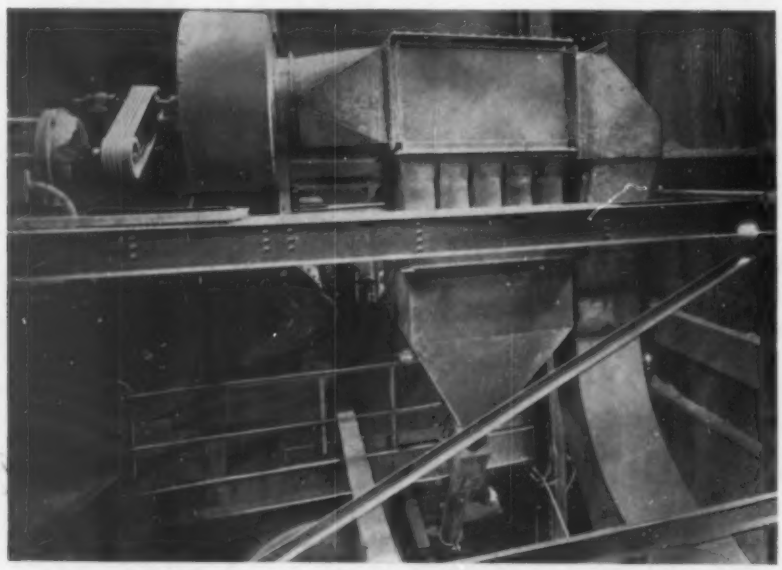
In rebuilding the entire clinker grinding mill, just completed, two-stage operation with ball mills in circuit with vibrating screens, followed by closed-circuit operation of tube mills was adopted. Lower power costs were sought, in particular, by this conversion.

Previous Clinker Grinding and Cooler Improvements

In 1936, Vanderwerp heat recuperators were put on each kiln to quench the clinker down to about 1000 deg. F. Passage through 6- x 60-ft. rotary coolers reduced the temperature to about 150 deg. F. for handling by Peck conveyor into the grinding mill feed bins. Sudden air quenching and low clinker temperatures, of course, are beneficial to grinding. Earlier, the rotary coolers alone discharged a clinker at 550 deg. F., a temperature which was too high for immediate grinding.

Before 1936, clinker was ground in three 7- x 22-ft. Compeb mills. Each had a preliminary section 7-ft. long followed by 14-ft. of length effective as a tube mill, with center feed and peripheral discharge. Capacity of each mill was 50 bbl. of portland cement per hour, but the surface was only 1425 sq. cm. per gram.

In 1936, an 18-ft Raymond mechanical air separator was closed-circuited with two of the 7- x 22-ft. Compeb mills, with an arrangement for the third one to be operated either in open circuit or with the air separator. At that time the compartment grid bars were opened up to speed the passage of material through the mills. Separator rejects returned into the mills with the fresh feed.



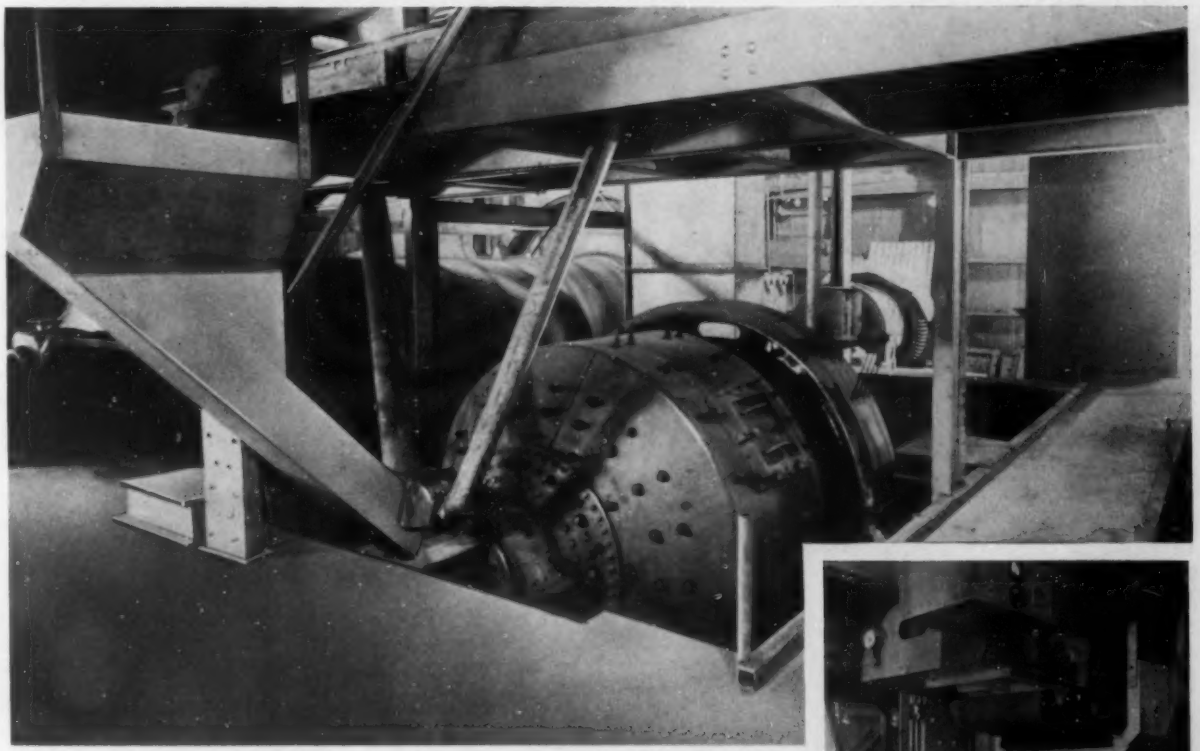
One of three cyclone type dust collectors to collect dust from breeching where clinker drops into rotary coolers. Note spout to drop dust to clinker conveyor below for feed to grinding plant in background

With this system of grinding, capacity of each mill went up to 60 bbl. per hour and the surface area was increased. To get this production, a circulating load equivalent to 75 percent of the feed in barrels into the mills was maintained. Feed into the separator comprised 60 bbl. per hr. of fresh feed plus 45 bbl. of rejects.

Then followed complete revamping of the clinker grinding department to further increase the specific surface of the cement. One Compeb mill was converted into a preliminary ball mill with double-end feed and common center discharge. The other two mills were changed to straight tube mills for final grinding. Vibrating screens were closed-circuited with the preliminary mill and the 18-ft. air separator with the tube mills. Feed into one end of the ball mill was regulated by a Hardinge electric ear, which maintains by sound the optimum level of material in a mill through electric connection with the mill feeder, starting and stopping the feeder motor automatically.

Material discharged peripherally from the preliminary end of the mill and was put equally over six 5- x 4-ft. Tyler Hum-mer screens. A separation was made at 20-mesh. Minus 20-mesh comprised the feed to the tube mills, at the rate of 150 bbl. per hour, and rejects returned into the opposite end of the ball mill. The circulating load, with the screens, was 50 percent.

The tube mills (2), in simple circuit with the air separator produced 90 bbl. of portland cement per hour each, with a circulating load of 50 percent, and to a fineness of 1600 to 1800 surface area. This figure equalled the previous production with



Close-up of new ball mill with tube mill in background. Attention is called to method of returning rejects from screen overhead; also lubrication system for ball mill gear

three mills and air separation but the surface produced was much higher.

Revamp Clinker Grinding Department This Year

Early in 1942 the entire clinker grinding department was revamped again. It now consists of two independent units, each with a new ball mill in closed circuit with screens, followed by passage of minus 20-mesh material through a single tube mill in simple circuit with the 18-ft. Raymond separator. The separator serves both halves of the grinding plant. Capacity of each tube mill has been increased as well as surface area with a reduction in power consumption.

Clinker is discharged directly from the rotary coolers on to a continuous Peck carrier that fills 1000 bbl. bins over each preliminary mill. Dust gathered from the breechings ahead of the rotary coolers, where they are fed from the kilns, is collected and discharged continuously on to the carrier. Three new Western Precipitation Corp. 30-unit Multiclone collectors were installed for the purpose.

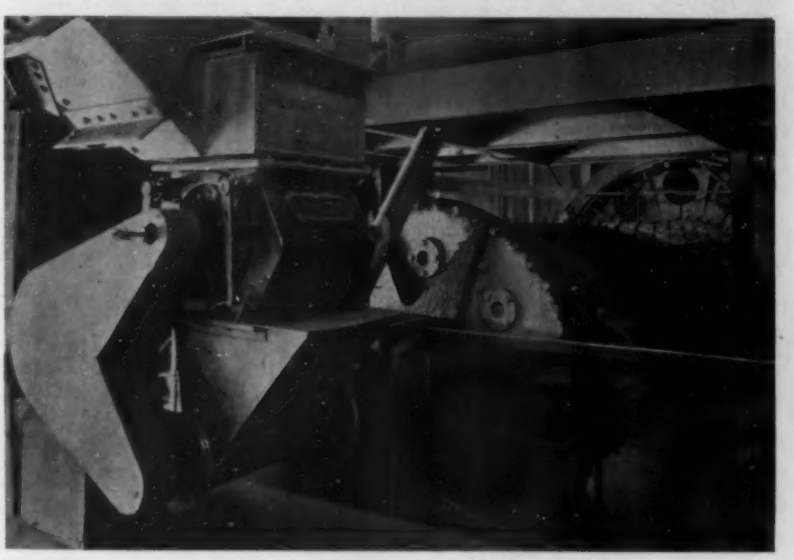
Preliminary mills are 9-ft. diameter by 48-in. Hardinge ball mills, each driven through a magnetic clutch by a 250-hp. synchronous motor. Each has automatic feed control, consisting of a Hardinge electric ear which stops and starts a Hardinge Feedometer to regulate the flow of clinker from the bin to maintain the most efficient mill level. The feeder

(Continued on page 39)



Feeder and electric control to automatically regulate flow of feed into ball mill

Finish mill, 7- x 22-ft., and feeder into mill. Note reject spout from overhead air separator



MINING

Change Over from Quarry to Mine

Central Rock Co. opens shaft type limestone mine adjacent to quarry without shutting down operations

By BROR NORDBERG



Electric shovel loading storage battery truck at 260-ft. level in mine

DRIFT MINES are not uncommon in the crushed stone industry, but shaft mines are seldom developed to excavate stone for commercial production. One of the few shaft mines developed for this purpose is the 265-ft. shaft operation of the Central Rock Co., Lexington, Ky. Construction work started on this shaft in April, 1940, and the mine is now being developed to soon reach its regular production.

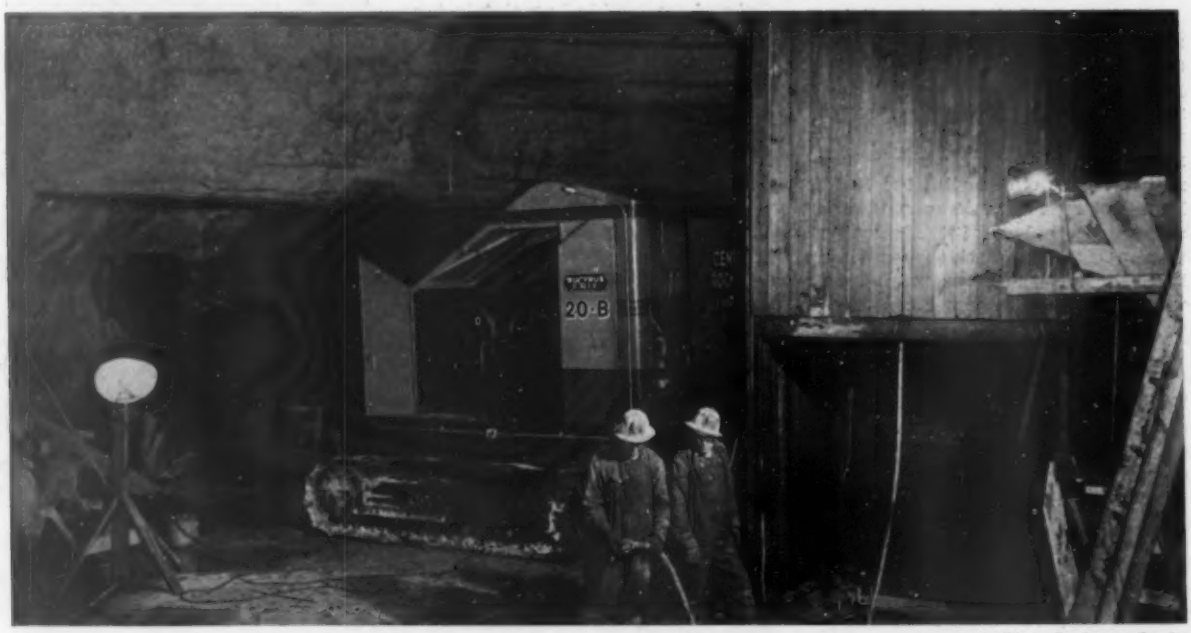
Central Rock Co. has operated an open face quarry for years on the outskirts of Lexington in an industrial section.

There were several reasons for the change to mining. An 18-ft layer of overburden had to be handled in the quarry and the excavation was nearing the limits of the property. The presence of shale, and the limitations imposed in blasting an open face so near to a built up section were other disadvantages. An operation uninterrupted by bad weather and in a better quality of limestone was desirable.

Make Studies of Rock Formations

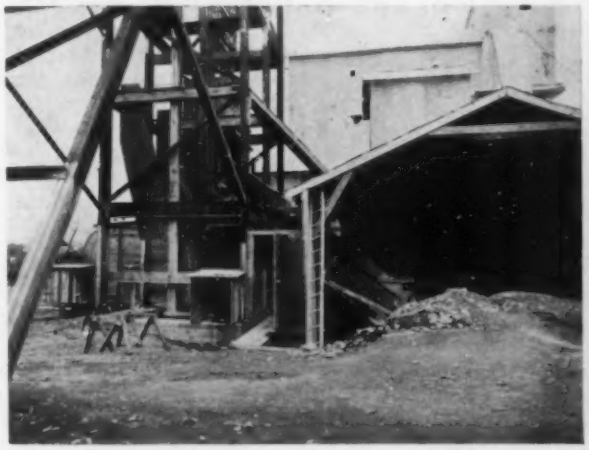
Preliminary studies of the rock formations available and the subsurface water conditions were started back in 1936. All the rock formations from the Brannan and Benson limestones, which were excavated in the quarry, down to include the Tyrone limestone which is the principal stone mined and the Oregon limestone which is mined to a lesser degree outcrop on the Kentucky river gorge 20 miles from Lexington. A study of these outcropping rock ledges was made, with the expert help of Kentucky state geologists, to determine the physical qualities of each.

The Benson limestone is fossiliferous, granular, thin-bedded and contains numerous thin partings. Next in order is the Jessamine, with similar characteristics, followed by the Hermitage limestone which has shale partings up to 18 in. thick and nu-



Short-boom, ¾-cu. yd. electric shovel in limestone mine soon after it had been placed in service

Photo Lexington Leader





Left: One of the skips set to dump down incline to gyratory crusher, to the right. Right: Skip dumping down the "rails" to the crusher

merous fossils. Curdsville limestone, the next lower formation, has shale partings up to 4 in. thickness. All of these are of the Lexington series. The presence of shale in all of them, and thin-beddings in some, made it necessary to go deeper in opening a mine. Tyrone limestone occurs next at about 150 ft. down, followed by Oregon, at 234 ft. Both are of the High Bridge series (Ordovician geologic age) and possess the qualities desired.

Tyrone limestone is a dense, fine-grained stone that is thick-bedded, with a few very thin shale partings. It is classed as a magnesium limestone. Oregon limestone is somewhat similar, extends down 30 ft. and rests on 130 ft of Camp Nelson limestone. The occurrence of these limestones and their physical description are shown on the accompanying log of a diamond drill hole from a core that was loaned to the University of Kentucky for interpretation.

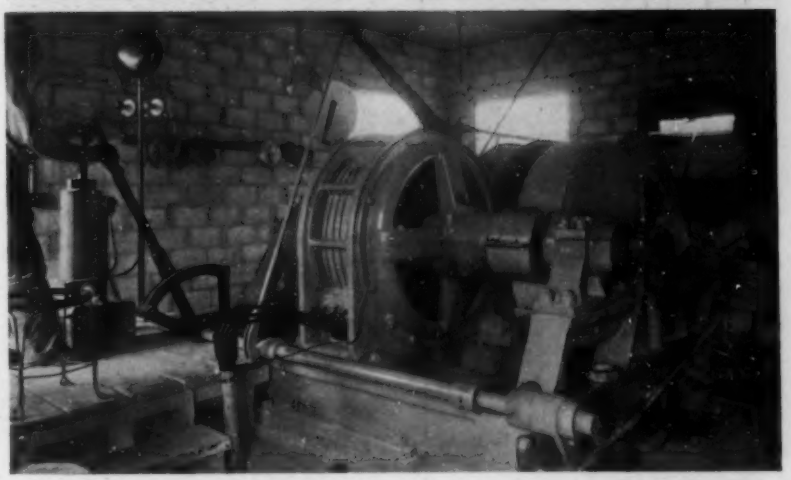
Drill the Shaft in Spare Time

Other work preliminary to opening a shaft consisted of visits to other mines and studies of all the available deep well records within a 100-mile radius of the plant. These records all showed three thin strata of bentonite at the same elevation near the top of the Tyrone limestone. The occurrence of these unbroken strata of bentonite gave assurance that water would not be much of a problem to mining. Bentonite is practically impervious to water and effectively keeps water from above out of the mine below.

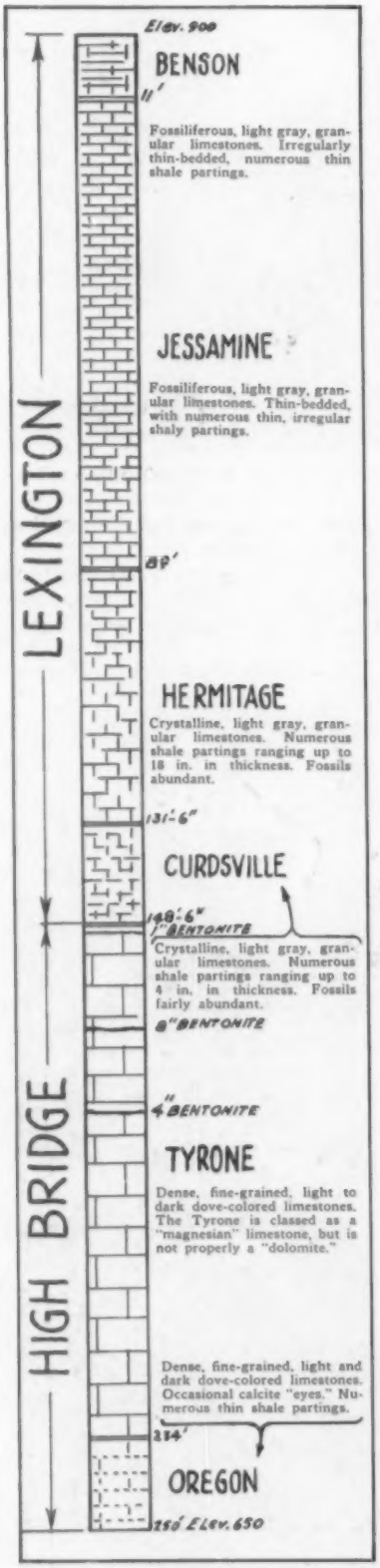
A vertical shaft, 7- x 22-ft. in cross-section was driven alongside the stone plant, adjacent to the primary crusher. All the work was done by company labor during periods of slack business when it was unnecessary to run the crushing plant. Sinking of the shaft required six months of intermittent work.

In excavating the shaft, vertical blast holes were driven on 2-ft. centers, in both directions, within the





Above: Superstructure over mine shaft in center; plant to the left, hoist house to the right. Note ventilating fan and balanced skips. Below: Hoist which brings up loaded mine car. Dial in front of operator indicates relative position of mine car



Note Bentonite deposits which prevent water seepage at lower levels

Left: Showing various rock strata in the area being mined

17- x 22-ft. rectangle, by jackhammers. These holes were 1¾-in. diameter to a depth of six feet. They were loaded with 1¼- x 8-in. 30 and 40 percent duPont gelatine dynamite cartridges. Each shot of 40 holes, hooked together and fired by delayed electric exploders, would lower the excavation by four feet.

Line Shaft with Concrete

Water was encountered at the 40-, 60- and 110-ft. levels, which necessitated some pumping while the shaft was being lowered. A cable-operated clamshell raised all the blasted rock out of the hole until the depth reached 200 ft., when elevating buckets were used.

It was necessary to line the shaft with a 14-in. thickness of concrete down to the 150-ft. level to keep the water out of the shaft. Concrete was poured with slip forms in 6½-ft. lifts from the bottom up. Four pours were made each week. Workmen handled the pouring operations from a raft which was kept floating to the proper level in the shaft. When working near the top, it was necessary to pump water into the shaft. No scaffolding of any kind was needed.

Excavation by Electric Shovel

Full development of the mine itself will take considerable time. It is progressing in the usual system, for limestone mines, of a series of working chambers, with supporting pillars to hold up the ceiling. Eventually a 40-ft. ceiling will be established, by stope drilling and blasting, from the present ceiling heights of 15- to 17-ft. Forty foot pillars will be left and the recovery will be 50 percent. Stone is being excavated by electric power shovel and hauled by trucks to the shaft for elevation by balanced skips to the crushing plant overhead.

Equipment such as the shovel and trucks had to be lowered piece by piece into the mine for re-assembly. The shovel is a 20-B Bucyrus-Erie machine with a ¾-cu. yd. bucket. Due to the necessity of working under a low mine ceiling in the early stages of the development work, the shovel has a 14-ft. boom and a 9-ft. 6-in. dipper stick.

Drilling and Blasting

Rooms now being excavated are 15- and 17-ft. high. Drift holes into the headings are being drilled by Cleveland rubber-tired wagon drills in much the same manner as in other Kentucky limestone mines. Vertical rows of holes are driven into the face, with two rows near the center line, 15-ft. apart, converging to meet about 10 feet back into the face. Two other vertical rows of holes further out from the center line converge to a lesser degree into the face. Near the side limits of the face, a third pair of vertical rows is driven almost straight into the face.

Twenty-four holes make up an average shot, to pull out 10- or 11-ft. of rock as wide as the corridor and as high as the ceiling. The holes are 2 in. at the bottom and are loaded



Drilling horizontal holes into heading using wagon drill

one-half their length with 35 and 40 percent duPont extra F and extra D dynamite in 1½- x 8-in. cartridges.

Each hole is stemmed to its length with screenings in paper cartridges, which are tamped in. Electric exploders kick out a wedge by first detonating the two center vertical rows of holes. Then the other two pairs of rows are fired one after the other. Delayed electric exploders will be used later to fire the three shots. The yield of about 400 tons to a blast will be increased to 900 tons as the mine is further opened up. Sullivan safety stopers drill the ceiling holes, on 6-ft. centers, which are detonated by an electric switch in single rows to drop the ceiling. Very little secondary drilling is needed and a pound of dynamite is expected to bring down an average of three tons of stone. Timken detachable bits are used in all the drills. After use they are shipped in quantity to Asheville, N. C., for sharpening by the Rock Bit Service Co. Compressed air is temporarily run through lines from the plant overhead.

Stone is loaded into a Walker electric truck, powered by storage batteries, and hauled to the mine shaft in 4-ton loads for transfer into the skips. The batteries are re-charged

over-night inside the mine. There are two 4-ton balanced Connellsville Mine and Supply Co. vertical skips which are raised to a dumping tipple alongside the primary crusher by a Vulcan 6-ft. drum hoist driven from a 200-hp. G. E. induction motor. The vertical lift is made in a little over a minute and the skips are tripped automatically above the crusher. The primary crusher, a 13-B Telsmith gyratory, is on its original foundations. It was only necessary to turn the spider at right angles and to install an inclined chute of railroad rails to the mine tipple in order to feed mined stone to the plant. Capacity of the plant is 80 tons per hour.

About two hours of pumping is all that is needed each day to hold down water. Circulating fresh air is supplied in the mine from a 55,000 c.f.m. Jeffrey Aerodyne Jr. fan at the top of the shaft. Air is forced down a 4- x 7-ft. air shaft which is part of the main shaft. Eventually the fan will be operated down in the mine.

Safety Features

Telephones have been installed in the mine and in the hoist house to signal when the hoist should be started. A dial in the hoist house indicates to the operator when the skip is approaching the bottom of the shaft, and there is an automatic device to stop the cars at the ends of each passage. Flashing lights and a bell system are also provided as a signal system above and below ground. Should a cable break, the fall of the cars would be arrested by automatic ratchets on the cars. The workmen wear Mine Safety Appliance Co. safety hats and Wolverine safety shoes to protect them from falling pieces of rock.

Open quarrying will soon be abandoned and future plans provide for complete facilities for the men underground. There will be an office, shop, first-aid station, dining room, telephones for outside calls and showers.

William J. Sparks, general superintendent of the company, supervised sinking of the shaft and the development of the mine. No outside help was needed even though the men were all inexperienced in working underground. T. W. Havely, president and general manager of the company, is probably just as well known as the mayor of Lexington. E. W. Ripy is vice-president and W. B. Isaacs is secretary-treasurer.

Grinding

(Continued from page 35)

is driven by a Reeves Vari-Speed motor pulley unit.

With a ball loading of 17,500 lb. of 4-in. forged steel balls, 15,500 lb. of 3-in. and 11,000 of 2-in., each mill produces 100 bbl. per hour of 20-mesh product. The discharge from each mill is elevated and split over three 4- x 5-ft. Tyler Hum-mer vibrating screens for a separation at 20-mesh, over Ton-cap wire cloth. Rejects are spouted into the chute carrying fresh feed into the mill and the fines are conveyed into 550-bbl. tube mill feed bins. The ball mills produce a product 95 percent minus 20-mesh, which means that very little circulating load is carried. Over 50 percent is already minus 200-mesh and 36 percent is minus 325-mesh.

Minus 20-mesh fines are fed into the tube mills by Fuller rotary feeders. The feed bins generally carry 30 or 40 bbl. of free flowing material in preference to filling them, to prevent arching. Each mill, driven by a 400-hp. synchronous motor, is loaded with ⅞-in. spherical balls. Screw conveyors and a bucket elevator carry the mill discharges to the air separator. Rejects are spouted into the fresh feed chute and the fines go to a 6-in. Fuller-Kinyon pump for delivery into storage silos. A 50 percent circulating load is maintained in the circuit. A No. 9 Parsons Oval Bag Dust Arrestor collects dust from the mill discharges, the conveyors and elevators, and returns it into the tailings.



On inspection trip in limestone mine. In the party is a reporter for the Lexington Leader, center, the mayor of Lexington, Ky., who is T. Ward Havely, president of the company, to the right, and W. J. Sparks, general superintendent, to the left

Rigid Instructions for Handling Explosives

More than 145,000 persons licensed under the new Federal Explosives Act were issued rigid instructions regarding storage, handling and transportation of explosives for the twofold purpose of preventing sabotage and preventing disasters involving explosives. According to the announcement by Secretary of the Interior Harold L. Ickes, anyone violating the instructions may have his federal license revoked, be refused a renewal of his license or may be prosecuted under the Act and thus be subject to a fine of not more than $5000 or imprisonment for not more than one year or both fine and imprisonment.

Mineral Wool Board Insulation

Armstrong Cork Co., Building Materials Division, Lancaster, Penn., has introduced a mineral wool board type of insulation for cold storage rooms. The board is said to have a thermal conductivity ranging from 0.31 to 0.33 at 90 deg. F. Manufactured in board size of 12 x 36 in. and in 1, 1½, 2, 3 and 4 in. thicknesses, it is applied the same way as corkboard and may be finished with asphalt plastic or portland cement plaster.

FLOTATION

Recovering Mica From Kaolin

Kaolin, Inc., finds it profitable to recover mica fines by flotation and tabling

By BROR NORDBERG

PRODUCERS of high grade kaolin from primary deposits in the mountainous country around Spruce Pine, N. C., have muscovite mica as one "foreign" material in their deposits. It is necessary to rid the kaolin from this mica, along with other non-metallic minerals, in purifying the kaolin for use by the ceramic industries in manufacturing porcelain, china and other high grade ware.

For years it has been the practice in America's greatest mica-producing center, to not only subtract the coarse mica from kaolin but to further process the mica as a valuable by-product. By the use of water, and screening, a certain percentage of the coarser mica could be recovered, and with the advent of tabling, still further recovery was obtainable. The most recent development is froth flotation for separating the finer particles from quartz and clay.

Kaolin, Inc., near Spruce Pine, which a year ago leased its mine and mill to Harris Clay Co., recovers coarse mica by wet screening, intermediate sizes by a combination of hydraulic classification and tabling and has been operating a flotation plant for over two years to float mica concentrates as fine as 60 percent minus 200-mesh.

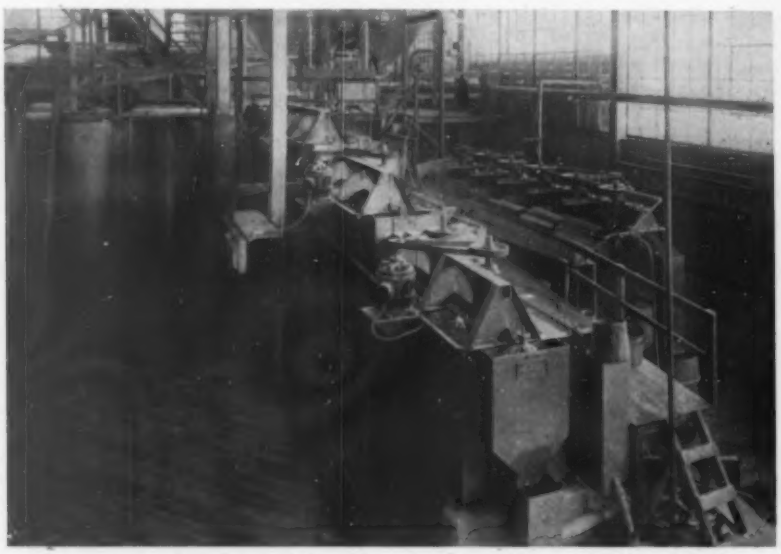
This concern has a beautiful, well-equipped plant designed and built five years ago to produce kaolin. Equipment for the production of mica has since been fitted into the kaolin flow-sheet by James R. Barr, Jr., to produce this valuable by-product.

A location for the original kaolin plant was established after years of search for primary kaolin deposits to be refined for consumption by the ceramic industries. Primary kaolins are considered superior to secondary, or sedimentary, kaolins which have through the ages absorbed certain impurities.

Kaolin, Inc., had leased the mineral rights for 4500 acres of property, in a kaolinized basin, that consists of high grade potash feldspar, flint and mica. According to H. J. Bryson, former State Geologist of North Carolina, the geologic formations on the property consist of both igneous and metamorphic types. The metamorphic rocks are composed of gneisses and schists of pre-Cambrian age and the strike is in a northeast-southwest direction with a dip to the northwest and southeast.

Igneous rocks consist of granite or alaskite, and pegmatite. The granite or alaskite is probably carboniferous in age and was intruded into the pre-Cambrian formations. Geologists explain that after the intrusion of the granite, it has been "reworked" due to mineralizing solutions penetrating the granite mass. The replacements in the granite or alaskite are principally of feldspar, quartz and some mica.

Pegmatites occur in lenticular masses cutting the granite and the pre-Cambrian gneisses and schists. They are composed essentially of feldspar, quartz and mica, with the feldspar predominating. The whole has been weathered and decomposed through the ages and the raw material being exploited is this product of weathering. To the eye, the deposit under excavation appears as a loamy material, but there are occasional hard rock sections of unkaolinized feldspar which are mined out and sold as such. Mica occurs throughout the kaolin, along with the quartz and other minerals, and comprises from five to ten percent of the total material. All of it is of the muscovite variety. Some of it is plated and the size runs from a top of ½-in. down to 325-mesh. Top production in the plant is a ton of mica per hour, depending upon how much feed, and what sizes of feed, are put through the flotation cells, and the grades produced. Similarly, the percentage of fines recovered down to



Flotation equipment for recovery of mica. To the right is a battery of cells, consisting of three roughers, two cleaners, and a re-cleaner cell; the other battery of eight cells comprise four roughers, two cleaners and two recleaners



Nestling in the mountains near Spruce Pine, N. C., is the modern plant of Kaolin, Inc., which is of concrete, steel and glass construction

325-mesh is dependent upon the size of feed, and mixtures of feed sizes, that are treated by flotation. The plant produces 60 tons of kaolin in 24 hours.

The deposit is worked as an open pit. Overburden of 10-ft. average depth is removed from the deposit by a ⅜-cu. yd. Austin-Western shovel, crawler-mounted, and powered by gasoline engine, which loads into Marmon-Herrington 4-wheel-drive trucks, each holding about 3 cu. yd. Mining is done with a 3-drum I-R hoist powered by a 35-hp. electric motor and a cable-hauled 1-cu. yd. Holcomb Westeeco scraper bucket. The scraper bucket is operated radially in all directions, pulling the mine run material into a centrally-located hopper. The usual cut in the pit is from the top in a downward direction, blending the material as the bucket is drawn to dump in the hopper set over an 18-in. tunnel belt conveyor. Kaolinized material occurs in a zone about 60-ft deep.

This belt conveyor, on 450-ft. centers, has Goodyear belting with a 10-hp. motor and Link-Belt gear reducer drive, inclines upward out of the pit to a hopper feeding into a Bartlett-Snow rolls disintegrator driven by a 25-hp. motor. This machine is designed to break up lumps and free the kaolin, without the application of water. One of the two rolls is of larger diameter than the other, the smaller one being equipped with special cutting knives. Most of the mine run material needs no reduction, but occasionally there are flint boulders and some hard, crude material that must be broken down.

Dual Plant Operations

Inclined 16-in. belt conveyors place the disintegrated material into two 40-ton steel bins. From this point on, to the sand boxes where the kaolin is recovered, the main plant is divided into dual operations—each side being a duplicate of the other, and both operated when full capacity is





Two views of mill interior showing blunger tank in background, arrangement of vibrating screens, reels (spirals) discharging into sand boxes, to the right



Five rotary screens in parallel with 200-mesh cloth for recovery of kaolin (throughs) which is settled in eight settling tanks

desired. Material is withdrawn from each bin and fed equally, at full capacity, into separate blungers with processing water, where two separations are made. A blunger is a large settling tank about 10- x 18-ft. and 7 ft. high in which the coarser particles settle and the fines overflow with water as they do in other types of settling apparatus. The blungers each contain three separate devices, on separate parallel shafts, that remind one of log washers, for freeing the clay from its impurities. Baffles in the tank cause the material to circulate, in order, through three compartments as it is agitated. After passing the third compartment inside the blunger at the far end from the overflow side, the coarse material settles and radial scoop buckets pick it up and put it through a 4-ft. long trommel screen. About 3½ gal. of water per second is added within each blunger.

Recover Mica As By-Product

Gravel (plus about ⅜ in.) is scalped out by the revolving screen and is dropped through a chute to a stockpile outside the building. Some of this material is sold locally as concrete gravel for construction. A sand jacket on the revolving screen makes another separation of coarse sand at about 4-mesh, which contains some mica. This mica is then recovered by wet tabling. Intermediate between the trommel screen and the tabling process is a hydraulic classifier that makes a split at 6-mesh. This is a Deister Machine Co. compound funnel type hindered settling classifier. Hydraulic water is introduced at the bottom and the adjustment on the water intake and the spigot discharge opening are the means of control.

All the sand may by-pass the classifier to a 16-in. belt conveyor which places it in bin storage, or part or all the sand may be put through the classifier preparatory to recovering mica. The classifier handles about two tons of feed per hour, discharging dewatered concentrates, which are practically all quartz, on to the 16-in. belt. Overflowing by gravity to a Deister Machine Co. Plat-O concentrating table are the minus 6-mesh sands containing mica. Quartz is settled in the riffles on the table and mica concentrate, from 70-mesh to 10-mesh, is ready for flotation feed. Sand tailings discharge on to the sand belt conveyor while the mica is at present caught in bags for transfer to flotation feed. From one to two tons of mica are recovered through tabling in 24 hr. of operation.

Until flotation and tabling were adopted, most of the mica was recovered from the blunger overflows, which are followed by wet screening over vibrating screens. A good portion of the mica produced is still recovered in this way, but is followed by tabling or, more often, by flotation for separation from a small amount of contained sand.

Overflows from the blungers contain considerable mica, practically all of which is minus 20-mesh; the sand is practically all minus 50-mesh. Since small particles stick to the larger ones, it is possible to make a

Left: Rotary dryer, below, for drying mica before screening; and above is a wet-type dust collector and back of it, the centrifuge to remove water from mica before drying it
Below: Looking down from centrifuge platform, showing dust collector and dryer





relatively good separation by screening wet on a 50-mesh screen. They also contain clay, weathered pegmatite, silica and feldspar. These overflows, from each blunger, are split over three 3- x 6-ft. single-deck Tyler-Niagara vibrating screens which have stainless steel cloth and make a separation at roughly 60-mesh. Overs are mica concentrate, which is usually pumped to the flotation feed tanks for a more complete separation from quartz.

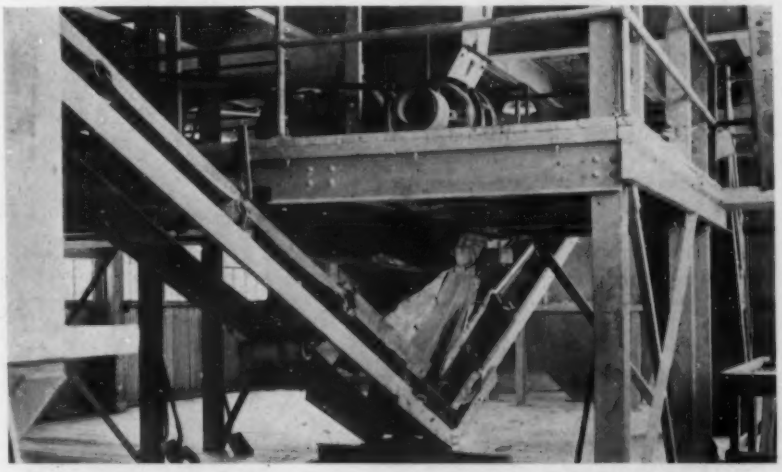
Material passing through the screen cloth on each set of three screens (there are two banks of three screens) enters a sand reel which is, in effect, a ribbon washer that does some grain size classification. The reel washes, dewaters and conveys. Settled material works back toward the feed end of the sand reel where radial scoop buckets pick it up and the settlings flow by gravity to the flotation feed tanks. Roughly this material, containing mica, is from 60- to 150-mesh.

Overflows from the two sand reels, containing 100- through 325-mesh mica, enter sand boxes, which are settling areas used in recovering kaolin. About 50 percent (the settlings are from 10 to 30 percent mica) of all the mica is in this size range, depending upon the conditions where the mine is being worked. Settlings in the sand boxes are pumped to the flotation feed tanks, while the overflow, containing clay and about 0.5 percent 200-mesh mica, is put through five rotary screens in parallel. Minus 200-mesh material passing through the cloth on these screens is clay and is put into eight settling tanks. Plus 200-mesh is either wasted or pumped to the flotation feed tanks. Clay, after settling, is put in mixing tanks, through filters, pressed into cakes and dried to produce the finished kaolin.

The flotation part of the plant consists of two 40-ton steel feed tanks, each serving a row of flotation cells. One row is of 32- x 32-in. Denver Sub-A cells, consisting of three roughers, two cleaners and a re-cleaner cell. Incoming feed enters the fourth cell in the row and rougher concentrate from the fourth, fifth, and sixth cells is put through the second and third cells for cleaning. Concentrates from the second and third cells comprise the feed to the re-cleaning cell.

The second set of cells consists of eight 42- x 42-in. Minerals Separation Process Air Flow cells manufactured by the Joshua Hendy Iron Works. Four of these cells are rough-

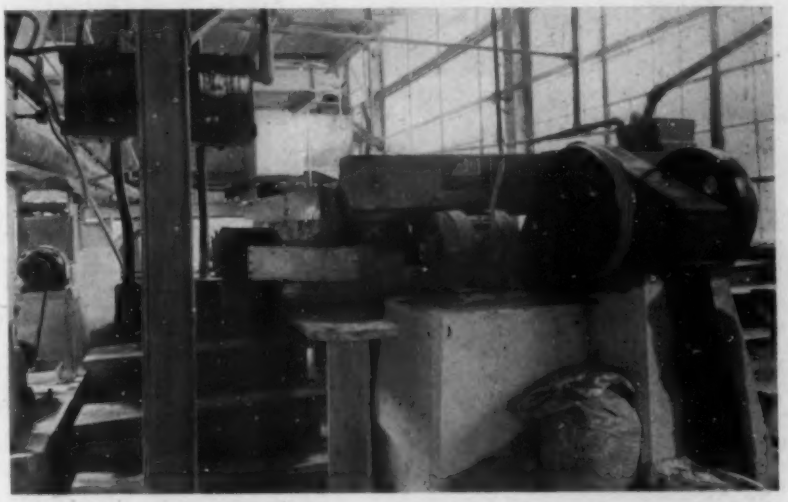
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Disintegrator, above, with belt conveyors below to wash mill feed tanks



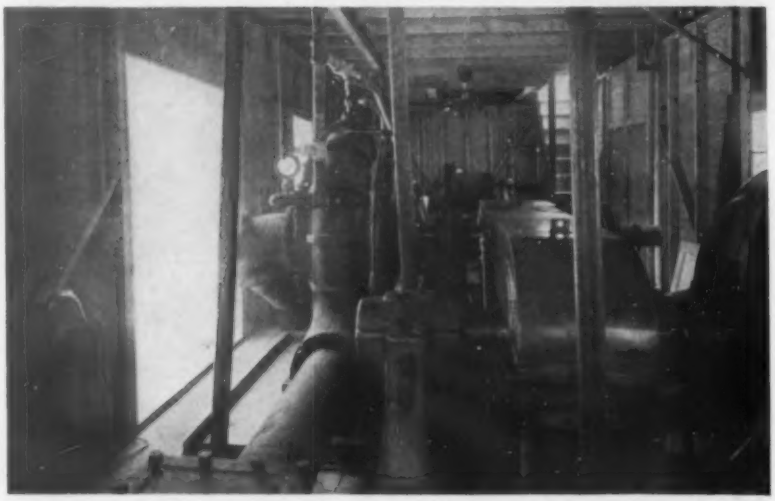
End of one of the blungers; compound funnel classifier may be seen next to by-pass chute, making a split at 6-mesh before tabling for mica recovery



Concentrating table on which some of the mica is recovered. Vibrating screens are overhead, to the left, and one of the sand reels is to the right in the background

Self-Cleaning Dewatering Screen Also Separates Sand Into Sizes







AFTER THREE years' operation of a sand and gravel dredging plant at Blenheim, S. C., Lawrence Stone and Gravel Co., Inc., Columbia, S. C., built a new dredge and doubled its production capacity to 150 tons of sand and gravel per hour.

Aside from the new hydraulic dredge, the method of dewatering and separating sand from gravel is of most interest. In order not to lift all the water and sand to the head of the screening plant (pipeline carries 60 percent sand and 20 percent total solids), a rather unusual dewatering plant has been set up on the shore of the lake.

Dewatering System

Seven hundred feet of 10-in. pipeline deliver the dredge pump output into a dewatering discharge box which has very little rise over the water level. The bottom of the box is an 8- x 10-ft. stationary screen of high carbon plate steel, sloped 5 deg. and ordinarily carrying 8-mesh perforations. This screen is intended to remove the water from the gravel and separate out the sand for re-handling when needed.

To prevent blinding of the screen, a blank plate of the same width has been inserted just 1½-in. below the stationary screen and extending almost to the discharge end of the screen. The theory of the plate is simple but it is effective. Water going through the screen perforations has some up and down surges, or pulsations, which clear the screen from particles that have a tendency to stick.

Near the discharge end of the screen, the fines and water drop through the unblanked portion into a sump, from which the sand can be reclaimed by a 6-in. Georgia Iron Works pump into bins from which it is loaded out for shipment by a tunnel

Top: Thin layer of top-soil is removed well ahead of dredge. Center: New silent-chain-driven dredge pump. Bottom: Self-cleaning stationary screen for de-watering and controlling sand sizes



New electric dredge has pontoons weighing 92 tons

conveyor. In producing sands other than for concrete, the appropriate screen is placed on top of the existing unit; for example, one with 16-mesh openings for masons sand.

Screening and Crushing

All the oversize from the de-watering screen flows over a 4- x 10-ft. double-deck Tyler Ty-rod vibrating screen. The overs are put through a small jaw crusher, to join the uncrushed gravel on a common 24-in. belt conveyor, 225-ft. centers, delivering to the plant.

The plant consists of a 4- x 12-ft. triple-deck Allis-Chalmers vibrating screen superimposed over open storage bins. Finished materials are reclaimed by a tunnel conveyor for shipment.

Dredge

Material is supplied to the plant by a dredge with a 35- x 70-ft. hull floated by four 23-ton pontoons of ⅞-in. steel plate. Excavation is done by a 12-in. Georgia Iron Works water seal pump with a 10-in. suction line and 10-in. discharge line, using an Amsco cutter. The pump is driven by a 100-hp. G.E. motor, 450 r.p.m., through a Link-Belt silent chain drive at 660 r.p.m. A 5-drum hoist operates the digging cutter, and one of two drums handles the spuds at the stern. Forty foot lengths of steel pipe are pontoon floated and lengths of 20 ft. on the shore make up the delivery line to the dewatering box. The original plant had an 8-in. standard Georgia Iron Works dredge pump.

From 6 in. to two feet of topsoil over the deposit is removed by a TD 40 International "Tractractor" pulling an Adams hauling scraper that holds 5 cu.-yd. of material.

H. E. Dixon, Columbia, S. C., is manager of the company which also has a plant at Wateree, S. C. Joe Stowe is superintendent of the Blenheim plant. The company is headed by W. R. Bonsal, Jr.

Flotation

(Continued from page 43)

ers with the tailings going to waste, two are cleaners and there are two re-cleaners. If flotation feed is taken from all the sources discussed, both batteries of cells are operated, otherwise only the row of eight cells is used. Four products containing mica are made in refining kaolin: the concentrate from the wet tabling, the plus about 60-mesh from the vibrating screens, settlings from the sand reel and that settled in the sand boxes.

Several reagents are being used in flotation, including du Pont 243 and Armour Amines, which are organic collectors; a pine oil frother, "Armour F"; a "soap" collector under license from the Phosphate Recovery Corp. and various others for pulp conditioning. Feed material runs from 10 to 20 percent solids, depending upon the size and rate of feed.

Most of the mica produced is used in the manufacture of asphalt prepared roofing by dusting on the hot asphalt coating to prevent sticking in the roofing roll or shingle bundle. Customer's specifications differ considerably, some asking for a 40-mesh top size, or a 50-mesh top or even 10-mesh, which requires that the mica be dried and sized over screens. Usually made products are a No. 40 mica (coarse), No. 60, No. 80 and No. 160 (very fine). Plant capacity runs from 1000 lb. to one ton an hour depending upon the grade.

Tailings from flotation are wasted and the concentrate is pumped into a cone-bottomed de-watering tank in the dry screening plant. Mica containing 70 percent water is put in batches through a Fletcher centrifuge which reduces the moisture to 30 percent water before drying. This material drops into a small storage bin from which it is fed out into a dryer by a screw feeder driven by a Reeves variable speed drive.

The dryer is a 54-in. by 30-ft. Louisville steam-tube rotary dryer, wherein the mica cascades over and around the steam tubes at a temperature of 260 deg. F. to discharge practically "bone" dry with a top of one percent moisture. Connected to the dryer is an American Air Filter Co. wet-type "Rotoclone" dust collector, which induces a draft through the dryer counter-current to the travel of the mica. Dust recovered through the use of water sprays is wasted as a clay sludge.

Dried mica is elevated to a screening floor equipped with a Howe single-deck vibrating scalping screen and two 2-deck finishing screens. Oversize from the scalper (plus 10 or 20 mesh) may be put through a small pulverizer and again passed over the screen. The finishing screens are Orville-Simpson Rotex screens, 30-in. by 7-ft. and 30-in. by 10-ft. in size. Finished material is bagged in burlap sacks by a Howe flour mill bagger and trucked to Spruce Pine for transportation in railroad cars.

Mica production for the asphalt roofing trade requires constant checking of every plant process. A nearly 100-percent mica product is required and a light-in-weight mica is preferred not to exceed a certain weight. The ordinary range for the coarser micas is 16- to 20-lb. per cu. ft. and 19-lb. up is specified for the finer micas.

Operations at the plant come under the supervision of D. E. Jones, assistant to the president, and J. A. Barr, Jr., processing superintendent and development engineer. Howard C. Marmon, Pineola, N. C., is president; D. I. Glossbrenner, Indianapolis, Ind., is secretary-treasurer, and R. G. Janatka is sales manager. The original kaolin plant was designed by the H. K. Ferguson Co., Cleveland, Ohio, and Mr. Barr designed the flotation and mica plant. Kaolin, Inc., has recently leased the mine and mill to Harris Clay Co.

Talc for Civilian Defense

TALC is said to be very effective for fighting fires caused by incendiary bombs and for fighting all sorts of bombs. Volume for volume it provides much more covering power than sand and it has adhering qualities that make it efficient for extinguishing burning magnesium. It will float on oil which makes it effective for oil fires and will adhere to phosphorous enough to make it safe until it can be disposed of.

Maintenance and Care of Portable Air Compressors

Recommended practices designed to obtain maximum service from compressors operated under wartime conditions

By RUSSELL GROSS*

ALTHOUGH AIR COMPRESSORS are usually so ruggedly built they give years of trouble free service, nevertheless abuse and neglect will always cause trouble. Today, with priorities in full operation, replacement parts are becoming more difficult to secure, with every indication that this condition will get worse. War production demands more and more air compressors of every type. Patriotism therefore, even more than good business, requires that every air compressor in operation today, be maintained at maximum efficiency for the duration.

Portable air compressors are usually driven by gasoline, oil, or Diesel engines. Care and maintenance of these different engines is an involved subject, and because of space limitations, is not included in this article, which is limited to a consideration of the air compressor alone. The operator to do his part should have a fair knowledge of engines, particularly if the compressor happens to be driven by Diesel power. Manufacturers supply instructions on engine and air compressor operation and it is urged that these be read carefully and conscientiously followed.

In general portable compressors require the same treatment as stationary units except that the portable feature has created several additional factors for consideration. Towing speeds, particularly in view of the rubber shortage, are important. High speed is never advisable. Jolting over rough roads imposes strains on frames and piping assemblies. Safe speed depends on the kind of tire on the truck wheel. The following table is based on the recommendation of the Compressed Air Institute, for proper towing speeds for portable air compressors:

Steel Wheels .....10 miles per hr.
Solid rubber tires.....15 miles per hr.
Solid rubber tires-springs.30 miles per hr.
Pneumatic tires-springs...40 miles per hr.

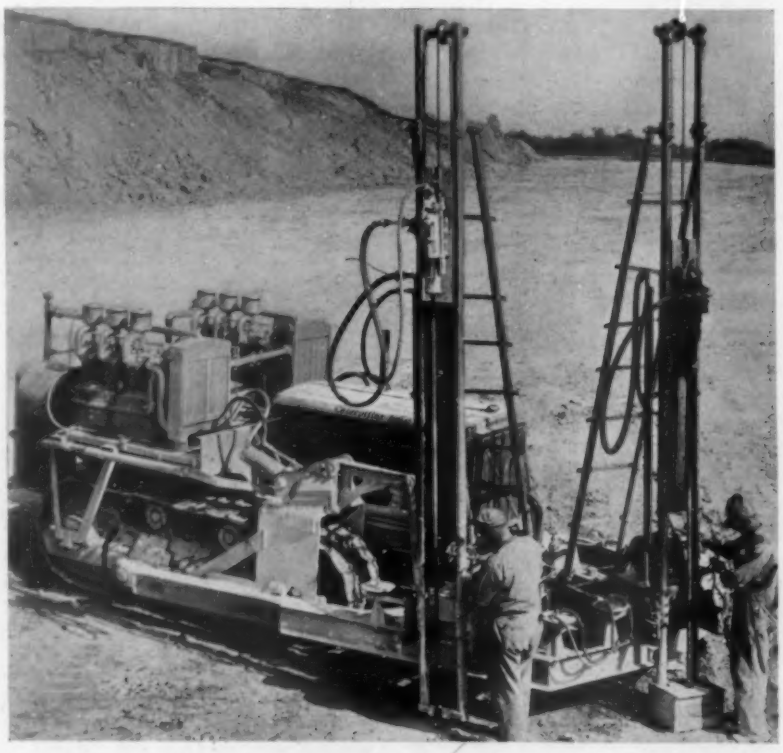
*Educational Director, Compressed Air Institute.

Operate portable air compressors in a relatively level position. Efficient lubrication requires this. Splash lubricated units if sufficiently out of level will not get proper oil distribution. Obviously, the length of time a compressor is to operate from one place has a bearing. Under usual conditions the eye alone can be used for leveling, but if a long time job is ahead, the machine should be set with a spirit level.

Because these machines often operate in exposed places reached by wind and dust, it is important that all air intakes and breathers be protected by efficient air filters. Dust and grit from the air, not only cause excessive wear in pneumatic tools being operated, but also result in rapid wear within the compressor itself.

Compressors operated in the open have less protection against extreme heat and cold, hence it is necessary to change lubricating oil to a viscosity number suitable for the prevailing temperature. Also, in winter, there is the danger of freezing. In this regard, a safe rule to follow when in doubt is to drain radiators, water jackets and intercoolers. For continued operation under freezing tem-

(Continued on page 79)



Two wagon drills and compressor mounted on tractor give mobility to this equipment in quickly reaching any part of the quarry

Practical Operation Conveyor Belt

Part 4: Precautions which must be observed to assure safe operation of conveyor belts

By MELVIN C. DOW* and HARVEY A. HARNDEN†

A BELT CONVEYOR is commonly considered to be a comparatively harmless piece of machinery, and this is true to some extent—an outstanding virtue of this machine. However, accident records show some dangers in it which should be guarded against. Broken splice plates or fasteners have caused serious lacerations. The innocent appearing idlers have caused injuries to the hands of careless workmen. Head and tail pulleys, and drive mechanisms have caused fatal accidents.

Aside from the humane considerations of such conditions, the operator is interested in the cold facts of costs. As on many machines the prevention of accidents on a belt conveyor is principally a matter of guards, good housekeeping and education of the workmen. Guards must not be disturbed, spillage and general debris must not be allowed to accumulate, lights must be kept in order, water, ice and snow must be removed from walkways, and in general the idea of "Safety First" kept prominent in the minds of workmen.

Guards for the gears, chains, and belts of conveyor drives are the usual type. For the balance of the conveyor, railings are the only feasible protection. These should be placed around the head and tail pulleys when they are open to accidental contact with the workmen either from falling or carelessness in performing their duties. Along the length of the conveyor a hand rail may be placed a few inches away from the edge of the belt in order to prevent contact with the moving parts. As accidents along this part of the conveyor are not common and usually not serious this is a refinement very seldom seen.

Here we have a suggestion for conveyor idler manufacturers. It would cost little for them to add a small lug to the end standards of troughing idlers which would support a one-inch pipe a few inches outside the edge of the belt; or to provide a connection for such a lug which they would furnish as an accessory. When these guards are once provided then it is necessary, as for any guards, that the workmen must be trained to keep them in good repair and in place. In addition to these the designer will provide ample walkways, cross-overs over the belts and working space around the pulleys. Then the operator must maintain them safe.

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†Formerly with Engineering Department, New York Trap Rock Corp.



Fig. 1: Downhill 30-in. belt conveyor in unlined rock tunnel. Note guard hand rail and wet conditions. A particularly troublesome belt, difficult to keep in alignment. Such conditions require frequent inspection

Control and Collection of Industrial Dust

By E. D. POWERS*

PART 3—High Efficiency Cyclones

WHEN CONDITIONS require a higher efficiency than is possible to obtain with either settling chambers or low efficiency cyclones, a high efficiency cyclone can often be used to advantage.

The principle of the high efficiency cyclone is generally the same as the low efficiency unit, the outstanding difference being the larger ratio between diameter and overall height and the higher velocity and pressure drop in the latter.

The dust laden air enters the collector tangentially and the dust particles being heavier than the air, are by centrifugal action forced out to the periphery where, by gravity and the swirling air, they are carried to the bottom of the cone; the clean air forming a vortex passes up through the center of the collector. This unit is in wide use in industrial plants handling a great variety of dusts. The efficiencies range from about 80 percent to ± 98 percent depending upon the shape, size and specific gravity of the particles. They are made in various sizes. The efficiency drops slightly as the size is increased and for that reason it is often advisable to use several smaller units in parallel. Also where space, particularly headroom, is limited a number of small units can be used to advantage in place of one large cyclone.

Checking Efficiency

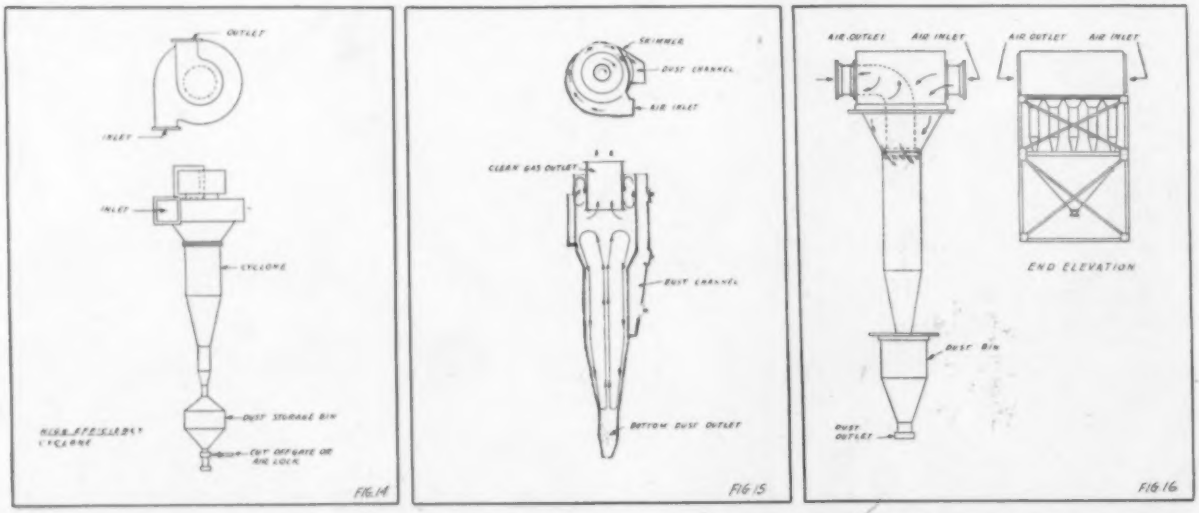
Except where conditions exactly duplicate an installation in operation, it is difficult to more than approximate the results which may range from 80 percent to 99 percent collection, unless tests are made before the system is designed. It is possible to do this in two ways; first send a typical sample of the dust to any of the larger dust collecting companies which maintain testing laboratories for that purpose.

Dust which has accumulated on the building or equipment will not give satisfactory information as the very finest particles will have in most cases floated off some distance and the results will not be representative. The sample should be drawn off a duct, chimney or other point in the system where a true sample can be caught. Extreme care must be taken as the dust concentration in a flue, is not uniform throughout the cross section. Methods are described in the section "Sampling and Testing."

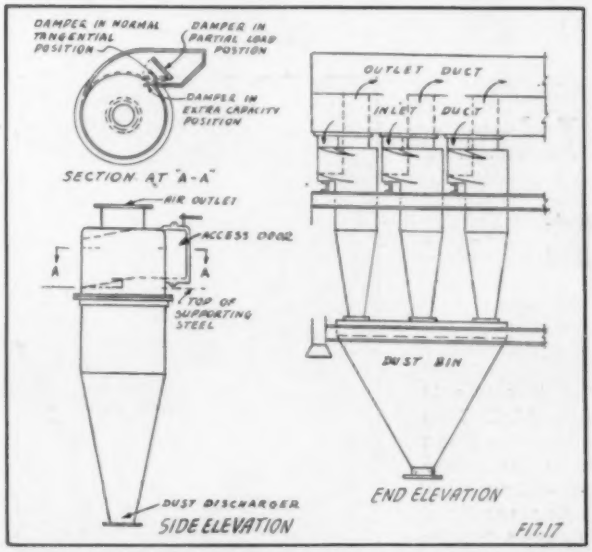
The second method is to borrow a small cyclone from a dust collecting company and make a field check. This must also be done carefully in order to get accurate results. The dust escaping from the cyclone discharge will in most cases furnish a sufficiently good optical demonstration but in order to obtain accurate figures the dust leaving the cyclone must be caught in a cloth filter, which must be weighed before and after use as it can easily absorb enough moisture to upset the calculations.

There are a number of the high efficiency cyclones on the market, one of the best known is the type shown

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Showing various types of high efficiency cyclone dust collectors. Fig. 14: Cyclone usually operated with an inlet velocity of 1800 to 2200 f.p.m., and a pressure drop from 2- to 4-in. w.g. Fig. 15: Skimmer type cyclone which skims off a portion of the heavily dust laden air. Fig. 16: Cyclone usually made in small units of 6-in. and 9-in. diameter



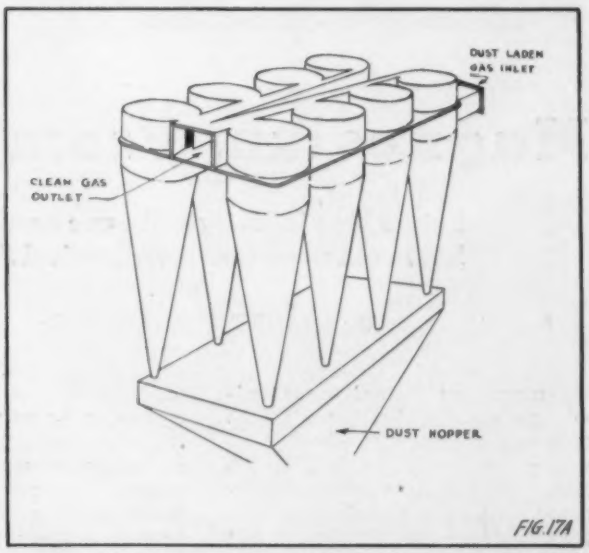


Fig. 17: Multiple type cyclone collector built in 2 ft. and 3 ft. diameters. Fig. 17-A: This is a comparatively new development adaptable as a multiple unit collector

in Fig. 14. Introduced somewhat over ten years ago, when it was applied particularly to fly ash collection, it has since been used on a great number of industrial dust problems. It is manufactured in standard sizes from 1,000 to 20,000 c.f.m. capacity, the latter being about 30 ft. overall height exclusive of dust bin or storage space at the bottom. For that reason and also because of the slightly higher collection efficiency of the smaller sizes, the recent tendency has been to use groups of small collectors rather than one large unit.

This cyclone is usually operated with an inlet velocity of 1800 to 2200 f.p.m. and a pressure drop across the cyclone of 2 in. to 4 in. w.g. The higher velocity and resistance should be noted for while the unit will be smaller with consequent lower initial cost and the efficiency somewhat higher, those advantages must be balanced against the increased power cost.

The following table gives some indication of the efficiency which may be expected with this type cyclone, but conditions vary so widely that it is well to take advantage of the very complete testing laboratory which this company maintains to predetermine the exact efficiency of the final installation. It should be noted that fractional efficiencies down to 325 mesh are given. Many companies still offer guarantees on the basis of overall efficiencies. A much more accurate measure of the effectiveness of a collecting system is by a combination of fractional efficiency guarantees, down to 10 microns if necessary, with an overall guarantee on any given sample.

Sieve No.	Opening in Inches	% Passed
Sulphur Ore Dust—approx. weight per cu. ft.—68.75 lb.		
325	.0017	97.0
200	.0029	98.2
150	.0041	99.1
100	.0058	99.5
Stone Dust—approx. weight per cu. ft.—67.5 lb.		
325	.0017	89.0
200	.0029	94.2
150	.0041	96.2
100	.0058	98.6
Fly Ash—approx. weight per cu. ft.—22.75 lb.		
325	.0017	66.96
200	.0029	87.36
150	.0041	94.68
100	.0058	98.43
Grain Dust—approx. weight per cu. ft.—17.85 lb.		
325	.0017	47.0
200	.0029	66.0
150	.0041	76.8
100	.0058	89.0

Selection of Proper Type

This unit is also used as a secondary or auxiliary, with several less efficient type collectors manufactured by the same company. About 5 percent of the gas carrying the highest dust concentration is skimmed off and passed through a relatively small cyclone. They were designed as a less expensive method of collecting fly ash and are not as efficient as an installation in which all of the gas passes through cyclones.

Another collector of approximately the same efficiency is illustrated in Fig. 15. Between the upper sides of the inlet and the top of the collector is a shaver which skims off a portion of the heavily dust laden air. A bypass extending down the side drops the dust into the conical section of the cyclone. This collector is manufactured in about 30 sizes to meet various requirements. It is usually designed to operate with an inlet velocity up to 2900 f.p.m. and a pressure drop under 3 in. w.g.

This company always offers guarantees on the basis of fractional efficiencies with an overall efficiency for each dust sample, which is by far the best method.

Fig. 16. Another of the high efficiency cyclones is usually made in small units of 6 in. and 9 in. in diameter having capacities of approximately 250 c.f.m. and 500 c.f.m., respectively. In cases where a slightly less efficient recovery is satisfactory this company furnishes units up to 24 in. in diameter. Groups of these cyclones can be used to handle any volume of gas required. Where space is limited, particularly headroom, this type collector can often be used to advantage.

A single 6 in. or 9 in. unit, having capacities of about 250 c.f.m. and 500 c.f.m., respectively, can be secured to make field tests before designing the dust collecting system. The 6-in. size is slightly more efficient than the 9-in. collector.

Another high efficiency multiple type cyclone collector is shown in Fig. 17. They can be arranged in

(Continued on page 51)

Magnesium From Lime

Future lime industry will have new outlets in chemical and metallurgical fields

By NATHAN C. ROCKWOOD



Typical of the modern shaft kiln lime plant is this modern, automatically-operated unit. Gypsum, Lime and Alabastine, Canada, Ltd.

PROBABLY MOST ROCK PRODUCTS readers are now familiar with the Pidgeon and similar processes of reducing the magnesium in dolomitic lime. Several articles have been published since we first made the industry acquainted with the process, and urged lime manufacturers to take the initiative in supplying the lime, if not the recovery of the magnesium. Several lime manufacturers are now making dolomite lime for this purpose, and others are furnishing dolomite to magnesium metal producers, who have their own lime kilns. At least one lime manufacturer is making magnesium.

Those who have studied the metal magnesium most believe that it has a great future. While the war has added great impetus to the demand, there seems little doubt that the metal will be used in the future, not only for commercial aircraft but for automobiles, railway trains and for many other purposes, where lightness and strength are essential or desirable. Probably its ability to burn readily, in powder form, with great heat, as well as light, will find industrial applications.

A flock of patents has already been issued to the Dow Chemical Co. for alloys of magnesium and silver, calcium, manganese, copper, zinc, tin, cadmium, nickel, barium, etc. The field of alloy possibilities has probably hardly been scratched, and by but few researchers. However, with magnesium a common metal, as it now is and will be, we may look for a tremendous development in special alloys for a variety of uses. To a lesser extent the same may be true of the metal calcium in the years to come, when cheap means of reducing the oxide (lime) are achieved.

However, the present great interest in magnesium is not the only thing that makes dolomite an asset to the quarry owner, or lime manufacturer. There is great activity on the part of research men and inventors in separating the magnesia (MgO) from the calcia (CaO) in dolomitic limes; and using the magnesia for refractories and other commercial purposes. Since magnesite deposits are rare and dolomite deposits common, a feasible process for separating out the magnesia from dolomite, or dolomitic lime, would have broad application.

The American Institute of Mining and Metallurgical Engineers has recently published the paper by Max Y. Seaton on "Production and Properties of Commercial Magnesias" (Technical Publication No. 1496), abstracted briefly in Rock Products, December, 1941, pp. 77 and 91, at the time the paper was presented at the Rolla, Mo., meeting of the Industrial Minerals Division of the A.I.M.M.E. In this paper Mr. Seaton refers to the possibilities of separating magnesia from dolomite as follows:

"What may well be considered inexhaustible quantities of magnesia occur combined as dolomite in deposits scattered throughout the United States. The separation of a relatively pure magnesium oxide from dolomite has long been an intriguing project to the chemical engineer, and a variety of recovery schemes have been explored on the laboratory, the pilot, and, in some instances, on the full commercial basis. Methods based on the difference of hardness between magnesium and calcium oxides after dolomite has been calcined (and in some instances partially hydrated) have been discussed and patented, but are believed to have found no commercial use. Considerable work has been done on the relatively simple scheme of calcining dolomite and leaching it with water to dissolve the lime and leave a relatively pure magnesia. Immense quantities of water are required because of the low solubility of lime, and securing, pre-purifying and disposing of this water presents a real problem. Despite these difficulties, however, this process is being sucesssfully exploited on a large scale for the production of a relatively high-lime magnesia for refractories. Other processes that have attracted much interest include the long-used Pattinson [12] process for the production of basic magnesium carbonate, the sugar-solution method of Scheibler, [13] various processes employing hydrogen sulphide, the calcium chloride cyclic process of Clossen, [14] and numerous other processes. Important quantities of magnesia no doubt will soon be produced in conjunction with the ammonia-soda process for the production of sodium carbonate. A paper soon to be published by the Bureau of Mines will deal comprehensively with the recovery of magnesia from dolomite."

Aside from its use as a refractory, Mr. Seaton describes chemical magnesia and activated magnesia. He says "more and more attention has been paid of late to the rate of chemical activity of magnesium oxide. * * * If weak organic acids are being neutralized, or if the magnesia is employed for combined physical and chemical purposes, questions of ultimate crystal size and reaction rate be-

REFERENCES

12. H. L. Pattinson: British patent 9102 (1861).
13. C. Scheibler: German Patents 14936 and 16575 (1881).
14. J. B. M. P. Clossen: German Patents 11456 (1879) and 15342 (1881).

come governingly important." In referring to activated magnesia, he says, "studies of the rate of reactivity of magnesium oxides have led to the discovery that proper processing can develop these oxides in such form that they are intensely active both physically and chemically, serving as splendid selective adsorbents for a variety of organic materials." * * * The field of usefulness of the activated magnesias has been explored in only the most casual fashion to date. It is believed that in the end some substantial tonnage outlets for such materials will be developed."

Nothing, so far as we know, has been done with activated calcium oxides, but apparently here also is a large field of exploration and development for the lime manufacturer. Enough is already known to predict that the field of lime manufacture, ancient as it is, has scarcely been explored for the uses of lime as a chemical; not merely as a crude product in the preparation of other chemicals.

Dust Collection

(Continued from page 49)

groups of practically any number. The cyclones are built in 2-ft. and 3-ft. diameters. The common inlet and outlet ducts make a very compact unit and permit exhaust stack and fan to be placed at either end. An unusual feature in this unit is the inlet damper. The operation of these gates permits constant inlet velocity even when the volume of gas handled varies. This can also be accomplished by decreasing the number of cyclones in operation. These units are usually operated with a pressure drop of between 1.5 in. and 2.5 in. w.g.

Fig. 17-A is a comparatively new development which seems to have many desirable features incorporated in the design. The recent tendency has been to build unit type collectors complete with supports, fan and drive, being shop assembled so that they can be easily erected by the maintenance organization of the average industrial plant. The above collector is very adaptable to multiple arrangements so that practically any quantity of gas can be handled without redesigning the installation. This feature is very important as it permits the extension of both the dust collecting system and the plant proper.

This arrangement eliminates the vertical stepping of the cyclones with consequent saving in headroom and also permits a smooth flow through the inlets and outlets without the usual restricting bends or elbows. The simplified standard design permits very economical fabrication. This company has also developed a positive means of discharging sticky materials which would ordinarily prevent the use of cyclone collectors.

The efficiency of all of these cyclones is approximately the same, the units of smaller diameter being slightly more efficient than the larger for any definite pressure drop. The cost per cubic foot of air handled in this type of equipment is very much higher than the settling chamber or the low efficiency cyclone. The operating costs are also high, both for power required and wear; the latter is, of course, particularly true if the dust is abrasive. The efficiency of collectors of this type may range from 80 percent to 98 percent depending upon the size, shape and specific gravity of the particles. Some control of collection is possible; high velocity, high resistance cyclones of small diameter are the most efficient but the value of the added efficiency must be appraised against the higher power and sometimes higher maintenance and initial cost. The space limitations often govern to a great extent, the selection of the particular type cyclone used. If a few percent efficiency in collection is not important and a high narrow space is available, a few large units may be used, whereas a low, wide space may lend itself more readily to a multiple arrangement of the smaller, more efficient units.

Advantages and Disadvantages

Advantages of the high efficiency cyclone collectors are: 1. high collection efficiency of fine dusts (minus 200 mesh) which may range from 80 percent to 98 percent; 2. no moving parts except fan; 3. can handle high temperature gases, mild steel construction can be used up to about 700 deg. F. and alloy steels above that temperature; 4. recovers dust in dry form; 5. is cheaper than cloth filters and electrostatic precipitators. Comparative costs against wet scrubbers and other types of collectors must be made on each individual job.

Disadvantages are: 1. higher power consumption than settling chambers, low efficiency cyclones, baffle type collectors and usually wet scrubbers; 2. initial cost higher than settling chambers and low efficiency cyclones; 3. if dust is abrasive, the repair cost may be high unless special abrasion resisting materials are used in the lower sections of the cyclones, and in the case of very small units, throughout the bodies. The general application of this type equipment is for the recovery in dry form, of fine dust at an efficiency of 80 percent to 98 percent depending upon the characteristics of the dust particles.

Cancel Illinois Conference

DR. M. M. LEIGHTON, chief of the Illinois State Geological Survey has announced the cancellation of the Illinois Mineral Industries Conference scheduled for Urbana, Ill., October 30 and 31, 1942, under the joint sponsorship of the Illinois Mineral Industries Committee, the Engineering Experiment Station of the University of Illinois, and the State Geological Survey. The sponsors have agreed to lend their combined support to the Regional Conference of the American Institute of Mining and Metallurgical Engineers to be held in St. Louis, on October 1 and 2. The war situation and the need for coordination of all industrial and research effort make it desirable to concentrate time and effort on the one meeting.

Selling Rip-Cord Bag Closure

BEMIS BRO. BAG CO., St. Louis, Mo., is now marketing the Rip-Cord Closure for textile bags. The Rip-Cord is sewn into the closure of the bag with a regular two-thread bag closing machine. Only minor adjustments are said to be necessary to adapt the machine to sewing the Rip-Cord.

Sand-Lime Brick Production and Shipments

Seven active sand-lime block and brick plants reported for July and seven for June, statistics for which were published in August.

AVERAGE PRICE FOR JULY

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Sebewaing, Mich.	....	....
Saginaw, Mich.	$12.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	16.50	18.50
St. Louis, Mo.	....	....
Watertown, Mass.	12.50	13.50

STATISTICS FOR JUNE AND JULY

	*June	**July
Production	2,884,120	2,172,377
Shipments (rail)	....	....
Shipments (truck)	2,659,664	2,117,362
Stock on Hand	1,065,331	1,094,596
Unfilled Orders	1,440,000	625,000

*Seven plants reporting: incomplete, one not reporting stock on hand and two not reporting unfilled orders.

**Seven plants reporting: incomplete, three not reporting stock on hand and three not reporting unfilled orders.



Mine car with a load of feldspar on its way to the grinding mills

Mining and Grinding Feldspar

Consolidated Feldspar Corp. mining methods near New York City represent 70 years of experience

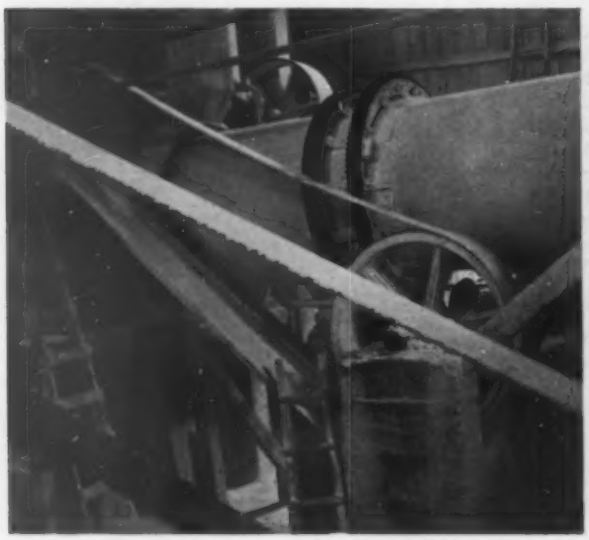
By R. CARL MOORE

FELDSPAR MINING is usually associated with mountainous regions—New Hampshire, North Carolina, or South Dakota—but the Bedford, N. Y., plant and mines of the Consolidated Feldspar Corporation are going strong only 30 miles from New York City, in the midst of big estates and commuters' homes. The plant has just celebrated its 30th year of operation and the mines have been operated for nearly 70 years. A good history of feldspar production in America is registered in the changes that have taken place in mining and mill operations here, intensified by the heavy real estate taxes and the high cost of labor so near New York, resulting in very efficient operation of the unit.

The plant itself is located on top of a mass of feldspar that forms the junction of two big feldspar mines, the larger of which is the great Kindel mine, first worked in the 1870's for rose quartz and later a tremendous producer of feldspar. Cary Jeffress, the veteran plant manager, states this is the largest feldspar quarry in the United States, and it certainly looks it. As the next level in this mine will be deep enough to entail extensive pumping, the mine is temporarily idle while more easily mined deposits are worked.

The second mine leading to the plant door is the big Clinchfield. Mining operations here are similar to those at the Bayliss mine, described later. The mouth of the mine is subject to rapid flooding and a pump has been mounted on a floating raft supported by 14 empty oil drums. The 8x6 Taber double-suction, involute pump, driven by a 4½x6, 4-cyl.

Left: Crushed stone passes through dryer before it goes to the ball mill. Right: Typical grinding mill equipment





Wisconsin engine, can deliver water at 2500 g. p. m. through the Raybestos-Manhattan hose.

Bayliss Mine

On the other side of the hill, a mile from the plant, is the Bayliss mine. Holes are driven by SKF drill steel, ⅞-in. in diameter up to 20 ft. long, by Ingersoll-Rand No. 55 wet jackhammers, and this equipment is used in all mines. Timken rock bits are used. The air compressor is a 5x5 Ingersoll-Rand driven by a 4-cyl. Waukesha motor. Track is 24-in. gauge, with 20-lb. rail and the mine cars were made in the Consolidated machine shop at Crabtree, N. C. A single-drum Lidgerwood hoist powered by a 6-cyl. Studebaker motor is used.

As it is necessary to pump occasionally from this mine, a Union Steam Pump Co. centrifugal unit, 4-in. suction and discharge, driven by an H-2 Continental power unit, is in use. A smaller pumping unit is also employed, a 2-h.p. Briggs-Stratton motor driving a 2-in. Gould centrifugal pump. The overhang in parts of this mine is such that wooden drilling platforms are swung from the lip of the quarry.

The Bayliss mine is noted for its production of glistening pink crude feldspar which fuses to a pure white and is used by some of the highest quality potteries after the finished product is passed 99½ percent through 240-mesh screen. A valuable by-product is rose quartz, which finds a ready market in the precast concrete industry. Some scrap mica also is produced. The crude feldspar from this and other mines is hauled to the plant by a fleet of four White trucks.

Use Dump Trucks at Colgate Mine

Near the Bayliss, is the Colgate mine, the newest operation. This quarry has no trackage, a Dempster-Dumpster mounted on a Ford dump truck being used for haulage. This handles both open and closed Dempster buckets.

The Bedford plant is in the forefront of the trend in other Consolidated units in contracting its feldspar mining. The company furnishes the equipment which the contractors maintain.

Diesel-Powered Plant

The mill itself is very compact. Power is furnished by a 165-hp. 22 x 24 Victor 2-cycle horizontal, single-cylinder Diesel engine. The crude feldspar is dumped into a 10 x 18 Reliance crusher, driven from the line shaft, set to approximately ¼-in. from which leads a Link-Belt bucket elevator, 20-ft. centers, discharging into a 4½ x 25-ft. coke-fed Ruggles-Coles dryer, lined with Silex. After passing through a home-made screen with ½-in. round holes, the oversize goes to the Hardinge mills elevator and the undersize moves directly to the screen elevator. The two Hardinge mills, one 8 x 22-ft. and the other 8 x 30-ft. can each be given the desired rate of feed. The discharge from the mills goes by Jeffrey screw conveyor to a Link-Belt bucket elevator which delivers to the 4 x 5-ft. Hummer screen, from which a conveyor belt takes the finished material either to storage bins or to the manually operated bagger, while any oversize returns to the mills by gravity. Condor belting is used. The 4-ply open-mouth paper bags are furnished by the St. Regis Paper Co. The filled bags are trucked seven miles to the railroad station, or even to customers. Truckloads of crude feldspar are weighed on Howe scales.

The plant is equipped with a dust collecting system designed by the late H. A. Womack, general manager of Consolidated. It employs a Claridge fan. The plant machine shop is equipped with a 8 x 16 high speed Prentiss lathe and a 20-in. Barnes drill press.

The Bedford plant is one of 14 units owned and operated by the Consolidated Feldspar Corporation, of Trenton, N. J. R. W. Lawson is president and M. J. McHugh, Jr., is secretary and treasurer.

Summary of Cement Production for 1941

Bureau of Mines reports that 164,030,559 bbl. of portland cement were produced in 1941 and that 167,439,237 bbl. were shipped, showing increases of 26 and 28 percent, respectively, as compared with 1940. Average factory price per barrel was $1.47, an increase of 1 cent over 1940 prices. Producers' stocks of finished product on December 31, 1941, were 19,955,979 bbl. which is a decrease of 15 percent from 1940 figures.

Shipments of finished product from the mills were 82.4 percent by railroad, 14.8 percent by truck, 2.7 percent by boat and 0.1 percent by pipeline. Thirty-one percent of the shipments was in bulk, 39.6 percent in paper bags, 29.4 percent in cloth bags and less than .05 percent in other containers. Electricity used in 1941 totalled 3,644,456,171 KWH, of which 52.8 percent was purchased and 47.2 percent generated at the cement plants. Fuel consumption included 6,831,825 short tons of coal, 3,552,030 bbl. of oil and 54,207,900,833 c.f. of natural gas. Commercial capacity for finished portland cement was 247,359,000 bbl., making 1941 production 66.3 percent of indicated capacity.

Allocation of Cement

According to newspaper reports there is a possibility that the War Production Board will take over the allocation of all cement. One of the principal reasons given for the rapid increase in demand for cement that may surpass capacity in certain parts of the country is that many war construction plants and military establishments have been re-designed to require less steel and therefore more cement. The increased demand was not foreseen and as a result inventories were not built up to the highest possible level.

Recently the demand for cement in all sections of the country except New England and the Middle Atlantic States was reported to have surpassed the available capacity, but the eastern mills are not expected to average more than 75 percent of capacity at any time in the near future.

The industry does not anticipate much increase in production from the W.P.B. order L-179 (Rock Products, August, 1942, pp. 88-92) which limits output to three types of cement. It is claimed that the types eliminated were manufactured in relatively small volume. Some relief is expected as a result of the provision which eliminates the separation of cement for specific customers in special bins.

Recently army orders for the first time carried priority ratings and some regional W.P.B. officers have specifically pointed out to the industry that these orders must have precedence over any that are not rated. The Colorado Portland Cement Co. is understood to have recently advised its regular customers that it would be unable to deliver any cement to commercial users during a 60-day period. Freeze orders on cement are already in effect in Texas, Oklahoma and Nebraska where the mills are furnishing all their output to the government. A big volume of cement is being shipped for use in construction of the Alaska inland military highway.

SAFETY

Determining Accident Causes

Third article of a series covering topics for plant safety meetings

By A. J. R. CURTIS

IT IS OF GREATEST IMPORTANCE that the cause or causes of every accident be accurately determined. It is far less important in any case, and of no importance at all in many cases, that attempts be made to place the "blame."

In starting out to determine the cause of an accident it is a common error to search only the immediate surroundings. In so doing, elements that are broader in their character—perhaps department-wide, plant-wide, or company-wide, or even industry-wide or country-wide, may be entirely overlooked. The ideal study into the causes of an accident is made in such detail as to disclose all of the minute points which may have bearing and yet with such breadth as to reveal even very general causes.

Since the determination of accident cause is a procedure which should be repeated as often as accidents (and possibly near-accidents) occur, it is desirable that a pattern be developed which may be followed in each case. If this is done it will prevent the occasional overlooking of essentials or of "shortcutting" the cause inquiry procedure and records of all of the accidents studied will be comparable.

Classification of Accident Causes

At the outset some convenient classification of accident causes should be adopted. Perhaps the most practical ideas on this subject to receive prominence come from H. W. Heinrich of the Travelers Insurance Company. Mr. Heinrich's classification is based on the fact that all accidents are due to one or the other, or to a combination of these two general causes:

(1) Faulty Human Behavior, which is generally divided into: physical or mental defects; lack of knowledge or skill; and wrong attitude

(2) Faulty Environment, which is generally considered to include: improper guarding; defective materials and equipment; hazardous arrangement; improper illumination; improper ventilation; improper apparel.

Many and perhaps most accidents are caused by more than one of the above cause factors although to varying extents. Each of these factors may be subdivided for more detailed analysis although in the cement and some other industries it is not considered worth while to subdivide.

The score card, shown herewith, will be found convenient in tabulating the causes of plant accidents according to these factors. The squares left for entries may contain merely a check indicating the presence of certain causes; if desired the estimated relative importance of each of the assigned causes may be expressed in terms of percentage.

Accident Report Examples

Following are condensed reports of four accidents which may be used as practical examples in determining causes and assigning remedial measures:

Accident No. 1. Tues., Jan. 21, 3 p.m. Stone Belt Tender, age 60, length of service 10 years. (Began work 7 a.m.) Employe was found in semi-conscious condition lying with head about 1 ft. from stove in small shed, overcome by carbon monoxide gas, so weak he was unable to call or go for help. He had entered tiny shed to eat his lunch, remembers only that after eating he became sick, weak and "tired." Gas from stove was blown back into the room by a high wind. At hospital, where he was taken from plant dispensary after 6½ hours' emergency treatment, his blood was found to contain approximately 10 percent carbon monoxide. Days lost from work: 18.

Indicate on score card what you believe to be the principal causes of this accident, then discuss and determine which of the following remedies (or others) should be applied to prevent repetition of this accident:

(*a*)—tear down the shed.

(*b*)—make sure flues are cleaned and fires are properly tended and banked.

(*c*)—make sure that all heating appliances are in perfect condition.

(*d*)—ventilate garages; warn against running auto or truck motors in closed quarters.

(*e*)—post striking warning signs as forceful reminders of safety rule.

Accident No. 2. Wed., July 3, 2:15 p.m. Oiler, helping mechanics on repair job, age 33, length of service 44 days. (Began work 8 a.m.) This new man



A typical safety committee group with officials of Pennsylvania-Dixie Cement Corp., Richard City, Tenn. In about the center standing in the second row is Johann Norvig, general superintendent, and below, fourth from the left, is A. E. Legg, superintendent

had received instruction in safety principles from safety director and several foremen. He reported to two experienced mechanics to help cut rivets off armored belt. A plant safety rule in regard to this particular job states that goggles must be worn by the operators and that the work of cutting rivets must stop when anyone approaches, to be resumed only after passersby have been warned away. Both experienced men were wearing goggles but allowed helper to start work without them. Flying rivet struck and destroyed sight of his right eye. Days lost: 53.

What are the principal causes of this accident? Which of the following corrective measures should be applied to prevent a recurrence?

(*a*)—require every employe to wear goggles constantly while at work in the plant.

(*b*)—assign an experienced employe as a "big brother" to look after each inexperienced man.

(*c*)—allow no new employe to perform hazardous work until he has memorized plant safety rules.

(*d*)—discipline the two experienced men as an example to others.

(*e*)—post a "goggles must be worn here" sign in every work location where they are required.

* * *

Accident No. 3. Sat., March 22, 10:30 a.m. Truck Driver, age 35, length of service 17 years. (Began work 7 a.m.) Injured drove 5-ton truck used in hauling stone into quarry garage for greasing during 25-minute shutdown. When ready to return to work, his foreman instructed injured to start truck by having it towed but did not insist that this standard procedure be followed when injured replied that his warm motor would start with a pull on the crank. Motor caught at once and truck, which he had left in second gear, moved forward crushing him against the wall, fracturing pelvis and rupturing bladder. This was first disabling injury in this quarry in 14 years and 5 months, and it terminated a period of 3 consecutive safe years for the entire plant.

Give principal causes of this accident and select from the following or elsewhere remedial measures which you believe should be applied:

(*a*)—install a bumping or chocking device on garage floor to prevent any truck moving forward beyond it either on entering garage or on starting.



SCORE CARD
For Assignment of Accident Causes

Causes	Number of Accident Report										Total Each Cause
	1	2	3	4	5	6	7	8	9	10	
ENVIRONMENT											
Improper Guarding											
Defective Materials and Equipment											
Hazardous Arrangement											
Improper Illumination											
Improper Ventilation											
Unsafe Dress or Apparel											
TOTAL Environmental Causes											
BEHAVIOR											
Physical or Mental Defects											
Lack of Knowledge or Skill											
Improper Attitude											
TOTAL Behavior Causes											
TOTAL CAUSES											

Score card used in determining cause of accidents in cement plants

(*b*)—equip all trucks with self-starters.

(*c*)—allow no exception to starting trucks by towing.

(*d*)—constantly warn drivers to check position of gear shift before starting motor.

* * *

Accident No. 4. Thurs., Oct. 2, 9 a.m. Quarry craneman, age 49, length of service 9 years and 9 months; present occupation one year. (Began work 7 a.m.) Large pin holding hog rods of shovel boom fell from its position, allowing hog rods to drop down. A-frame started to fall and injured jumped from shovel 6 ft. to floor of quarry to avoid being caught. Sprained longitudinal arch of left foot kept him from work 17 days. Actually, he jumped after all danger was past, for A-frame dropped only 2 ft. and then checked. No trace of the bolt which acted as a cotter pin to hold large pin in place could be found.

Determine principal causes of this accident and select measures to prevent repetition. Would you:

(*a*)—place men with better nerves on jobs like this?

(*b*)—admonish safety inspectors to look for maintenance items as well as new hazards requiring guards?

(*c*)—train all operators to make minute inspection of their own equipment periodically?

(*d*)—provide adequate space for operator to step back into in case of emergency like this?

Installs Second Dredge

KIVETT & REED, INC., Sun, La., has installed a new dredge, using an 8-in. Amsco counterflow pump powered by a 200-hp. electric motor. Pulp material consists of approximately 25 percent gravel and 75 percent sand which makes an undesirable excess of sand. This material is pumped to the top of a tipple where about 70 percent of the excess sand is scalped off. Remaining gravel and sand is then pumped to the washing plant where it is rewashed, sized, and placed in bins for loading out by belt conveyors.

AGSTONE

How Middle West Built Up Market For Liming Material

Part 3: Tax status of agricultural limestone. Future market dependent on transportation and seasonal limitations

By J. R. BENT



End-gate type of agricultural limestone spreader in action

SALES TAXES are becoming almost universal. In Illinois, for constitutional reasons, it has taken the form of an "occupational" tax, which is to say it is not a tax upon commodities as they are sold, but is a tax upon the seller, based upon his occupation as a "retailer." Clearly there is a tax upon the agricultural limestone seller. The tax is payable by the producing quarry if the latter sells direct to the farmer; it is payable by the dealer if the latter buys from the quarry and then sells to the farmer; it is payable by the trucker if the trucker buys from the quarry and sells to the farmer "Delivered at the Farm" or "Spread on the Fields." In each case the tax must be computed upon the value of the material at the point where its ownership goes over to the final purchaser—the farmer.

When the Government stepped into the picture with its A. A. A. program, it bought under bidding procedure, in the name of the Government, from the successful bidder (quarry operator, dealer or trucker); paid for the material from the Government's treasury; and then in effect, sold the material to the farmer, deducting payment therefor from the farmer's compliance check, at the end of the contract year.

After much debating and weighing of the factors, it was finally agreed in Illinois that the Federal Government thus acts in the capacity of a "middle-man," and so the successful contractor (quarry operator, dealer or trucker) was not functioning as a retailer, and could not be assessed the sales tax. This is an interesting distinction which should not be lost sight of in future practices.

A Look Into the Future

In attempting to foresee the future for agricultural limestone, there are several factors which are destined to have very great influence. Unfortunately, it is not possible definitely to determine just what the influence will be in each case. First, there is, of course, the matter of the duration of the war, and the economic status of this country, and of agriculture in particular, following the war. Second, there is the problem of mechanical equipment and labor supply necessary to the production, transportation and spreading of agricultural limestone. Third, there is the question of the continuation of the Federal Government's Soil Conservation policy, and what form of program will be adopted, following the war, to carry out such a policy.

As to the first of these,—the economic condition following the war,—It would seem reasonable to hope that such a depression as followed World War No. I, can be largely avoided or minimized this time. This hope is based upon the fact that experience No. 1 has caused all interests to anticipate the danger and be prepared against repetition of the same experience. The present war being much more world-wide than World War No. I, it is bound to be true that many of the Eureopean and Asiatic countries are going to be in sore need of food supplies during the first two or three years of rehabilitation. True, most of the countries will not be in financial condition to pay, in ready cash, for imported food supplies; but the cause of humanity in its world-wide-aspect is not going to be ignored, and some way surely will be found under which America's agricultural productive capacity will be utilized in meeting the needs of the hungry nations. It would seem almost certain that American Agriculture has a number of years ahead of it in which maximum or near-maximum production will be required.

As to the second factor,—mechanical equipment and labor supply,—The most serious problem in the mechanical equipment probably will be the tire supply, and next to it, the number of transporting and spreading trucks which will be available. It seems likely that by or before the end of the present conflict, America will be producing vast quantities of synthetic rubber and will be able by that time to take care of the more important commercial as well as war needs. How quickly the auto manufacturers will be able to return to the manufacturing of trucks is, of course, a question; but it would seem reasonable to suppose that this class of vehicles will be given as much right of way as pleasure and passenger cars. Many of the trucks which are in service today are likely to be in serviceable condition by the end of the war, either because they have been maintained while in use or have been kept out of use temporarily through lack of tires.

As to the labor supply, it can be confidently anticipated that there will be a large number of returning soldiers skilled as truck drivers, who will be available for this service.

Now as to the third or last factor,—The Government's Soil Conservation policy,—The conviction seems to be prevalent, among present government officials and among farm organization leaders, that a national soil convervation policy has been established to stay, and the future years will not see it abandoned, — though doubtless changing conditons and changing political parties may bring about more or less radical changes in the way in which the national policy will be made to function. Regardless of the form, it is hard to conceive of a program which does not have an encouraging, if not even a compelling, effect upon the farmers, as a whole, to make more and more adequate use of such fundamental soil practices as "limings"

Carbon Dioxide from Lime Kilns

Ways of arranging lime kilns for the recovery of concentrated CO_2 without absorption systems

By VICTOR J. AZBE

WITH HIGH CALCIUM limestone being almost half CO_2 and dolomitic stone even more than half, it seems that the lime kiln should be about as good a source of CO_2 as any. Still, except for alkali and sugar manufacturing plants, there is seldom any effort made at its recovery and utilization. We know of two lime plants producing precipitated chalk which produce CO_2 for the process separately in coke furnaces rather than recover it from kilns. So the plant of Alabaster Lime Co., Siluria, Ala., where CO_2 is absorbed from lime kiln gases, is decidedly an exception, but even in this case they recover low strength gas of about 20 percent CO_2 while this paper deals with the recovery of gas of close to 100 percent CO_2.

On just random tapping of a lime kiln one may get a gas, moisture saturated and corrosive, containing at times possibly even less than 15 percent CO_2, which for many reasons may prove so troublesome as to be worthless.

It is not particularly difficult for one familiar with kilns and kiln operation to work out an arrangement so that dry kiln gases would be obtained with CO_2 around or even in excess of 30 percent. Such a gas could be used in some processes direct, but in most cases the CO_2 would still be too low and the whole would have to pass through a complicated process of absorption by solutions and subsequent boiling off to give the desired close to 100 percent CO_2 gas concentration.

There has been considerable effort expended in devising processes to obtain this high concentration direct without the use of an absorption system, but these processes involve indirect heating of limestone through walls similar to those in calcining retorts, only that the retorts are large and arranged for continuous operation. We are not in a position to set ourselves up as judges of these systems but one or more are in practical operation and no doubt all pertinent information is available to those who may be interested. We may only say that calcination of lime is a high temperature operation and that the transfer of great amounts of high heat through walls, to avoid mixing the products of combustion with CO_2 from the stone, presents serious problems of design and operation. First cost and operating costs can readily defeat the advantages that there may be over the conventional system when gases, low in CO_2, are concentrated by absorption.

In view of the fact that the demand for CO_2 may increase due to its use in manufacturing synthetic rubber, it seems advisable to again call attention to a system of obtaining high strength CO_2 (U. S. Patent No. 2199384) which is closely related to ordinary lime plant practice and which utilizes kilns very much like the ordinary kiln of the more modern design.

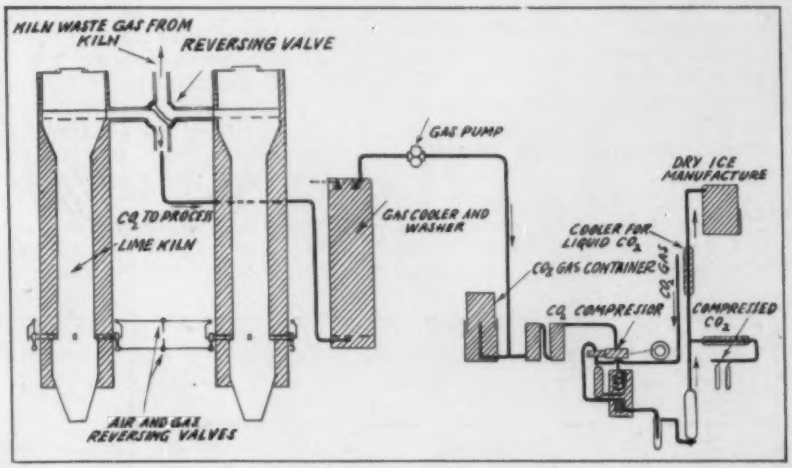
A lime kiln that is well heated and producing lime at a good rate has a great deal of heat stored. If, on such a kiln, either the natural gas would be shut off, or the grates drawn bare of fire or the producer gas closed off, the kiln would still continue to make lime at a progressively slower rate for an hour or so longer and would continue to pass off CO_2 gas. This can be readily proven on almost any lime kiln with a simple Orsat.

Operating Kilns as Retorts

If a kiln would be so arranged that it could be shut off tight against the access of air, the heat in the kiln would be retained longer and the CO_2 evolving period extended. The kiln then would become virtually an internally heated retort and the gas coming off, being undiluted with air or products of combustion, would be practically pure CO_2 gas.

Such a gas, after cooling, could be compressed, liquified, solidified or otherwise treated without passing it through the usual chemical absorption processes. The illustration shows the more essential features of this

(Continued on page 82)



Arrangement of two kilns fired alternately, with tight shutoff against access of air, to extend the period of evolving CO_2

Hydrated Lime for Thermal Insulation

By F. C. MATHERS [1] and HENRY S. WILSON [2]

THE VALUE OF ANY MATERIAL for thermal insulation is largely determined by the number of air cells or dead air pockets. Hydrated lime has these properties necessary for thermal insulation, but its ease of wetting by water makes its use for insulation impossible. This research report describes the mixing of hydrated lime with such materials as rosin, whereby the lime became water repellent. About 0.5 percent of rosin was used, and mixing with the hydrated lime in a ball mill for two hours was sufficient. In most of the experiments, a high calcium lime was used, but dolomitic limes gave the same results.

"Insulim," the name given to such waterproofed hydrated lime, would continue to float on water for weeks, and could be made to mix with water only by excessive heating or vigorous stirring of the mixture. The experiments described show that insulim, in comparison with the other insulating materials on the market, ranks high.

Outline of Experiments

The general principle or method of testing was to place each insulating material in a beaker with a thermometer at a definite distance from the sides and bottom of the beaker. The beakers were then placed on supports in an oil bath which was heated. A comparison of the rates of temperature rise at equal intervals of time gave an accurate ratio of the insulating values of the various substances. The oil bath was more uniform than electric plates, ovens, or refrigerators.

Experiment No. 1

Each thermometer for the experiments in this table was 3.5 cm. from the bottom and 4.5 cm. from the side of the beaker. The table I shows that only "Red Mud," a by-product from alumina manufacture out of bauxite, gave as low a temperature rise as did the insulim, and all the other agents allowed more rapid rise.

TABLE I: TEMPERATURE AT THE VARIOUS PERIODS IN DEGREES F.

Time in Minutes	Insulim	20 Century Lime	Saw Dust	Rock Wool	Red Mud	Earth Inf'l	Coarse Cork
0	75	75	75	75	75	75	75
15	84	89	105	93	86	102	105
30	100	107	120	113	100	116	122
45	111	120	125	123	111	120	123

TABLE II: TEMPERATURES AT THE VARIOUS PERIODS IN DEGREES F.

Time in Minutes	Heating Up Gypsum Waste	Insulim
0	75	74
15	84	80
30	136	105
45	192	145
60	228	185
75	246	214
90	252	224
105	260	242
120	266	254
140	268	268
	Cooling Down	
	260	268
	236	266
	206	248
	186	228
	174	214
210	102	118
225	97	111
240	93	104
255	89	100

A long comparison test against a commercial insulating material, made by grinding waste gypsum board, showed marked superiority for insulim. The thermometer, in each case, was 3.5 cm. from the sides of the beaker and 4.5 from the bottom. Table II shows that the insulim is much superior to the gypsum scrap.

It was estimated that the insulating values of insulim and gypsum scrap were in the ratio of 4.5 to 1. This was tested by having the thermometer bulb 1 cm. from the bottom of the beaker of insulim and 4.5 cm. from the bottom of the gypsum scrap. The data are shown in table III. These data show that insulim really is equal to about 4.5 times its thickness of the commercial gypsum waste as both thermometers remained approximately the same. A similar experiment, except that the thermometer in the gypsum waste was 2 cm. from the bottom, gave a slower rise for the thermometer in the insulim. This was merely a check on Table III, and therefore 2 cm. of insulim is much better than 4.5 cm. of the gypsum waste.

A direct comparison was made with rock wool in the same way. Again the thermometer bulb in the insulim was 1 cm. from the bottom of the insulim and 4.5 cm. in the rock wool.

TABLE III: TEMPERATURES AT THE VARIOUS PERIODS OF TIME IN DEGREES F.

Time in Minutes	Heating Up Gypsum Waste	Insulim
0	80	80
15	88	93
30	122	123
45	158	161
60	194	196
75	214	220

This shows that 1 cm. of insulim is very much better than 4.5 cm. of rock wool. The rock wool was packed tightly in order to give it a maximum insulating value. As ordinarily blown into a building, the insulating value is much less than when packed. A comparison of a mixture of 3:1 insulim and pine shavings or oak sawdust showed that no change in insulating value was produced by the

(Continued on page 83)

*From a thesis of Henry S. Wilson as partial fulfillment of the requirements for the degree doctor of philosophy at Indiana University, June, 1938.

[1] Professor, Chemistry Department, Indiana University.

[2] Associate Professor of Chemistry, Louisville Municipal College, Louisville, Ky.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

SMALL HOUSES *Comprise a Large Market*

Fireproof concrete masonry home built by R. C. Dewey, Inc., Buffalo, N. Y., to come within the defense housing price ceiling




With
Stearns Joltcrete
Blocks you get the
best building jobs
Carillon Tower, University of Michigan, Ann Arbor, Mich. Stearns Joltcrete Blocks furnished by Luther Randolph, Ann Arbor.
Write for folders on the type of machinery you are interested in
STEARNS
MANUFACTURING CO. ERIE, PENN.
Manufacturers of Complete Equipment for Concrete Products Plants
Stearns production is running largely to war work—but with the plant operating 24 hours per day we are still able to supply vibration and tamp block machines, mixers and skip loaders to those customers who need them for necessary construction projects.

Bell-and-Spigot Pipe Made To West Virginia "Specs"

Universal Concrete Pipe Co., Parkersburg, W. Va., plant produces 10- to 60-in. pipe

ONE OF THE NEWEST in the chain of concrete pipe plants built in recent years by the Universal Concrete Pipe Co., Columbus, Ohio, is the Parkersburg, W. Va., plant. This is the 23d permanent plant built by the company, which has been expanding throughout the Eastern and Southern states and in the Southwest. Production started in April, 1942.

The Parkersburg plant is typical of most of the others, in design and the equipment used. It was built on the site of a former concrete products plant and machinery was installed in the existing structure after enlarging and rebuilding part of the structure. Plant production is 736 ft. of 18-in. diameter pipe in 8 hr. and the sizes manufactured are 10- to 60-in. Culvert pipe and sewer pipe of the bell-and-spigot type are made to West Virginia specifications. Apparently, the engineers prefer the bell-and-spigot fit for pipe to be laid in mountainous and hilly country.

The pipe machine is the standard skip-charged tamping machine manufactured by the Universal Concrete Pipe Machinery Co. Aggregates used are washed sand and gravel that are trucked to the plant. Proportions are weighed in wheelbarrows on a Howe platform scale and the aggregates are



Spot welding a pipe reinforcing cage with an electric welder

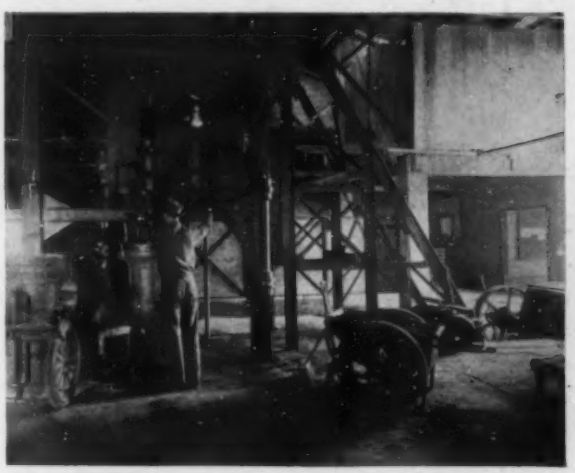
then dumped into a ½-cu. yd. capacity Stearns concrete mixer. Three-bag mixes, all of standard portland cement, yield about ½-cu. yd. of concrete which is elevated into the pipe machine feed hopper by a ½-cu. yd. skip bucket. A 1-ton Yale electric hoist, driven from a 7½-hp. Westinghouse induction gearmotor elevates the skip. Concrete is fed into the pipe molds from the machine hopper by a screw feeder. All the motors in the plant are Westinghouse, with sealed sleeve bearings.



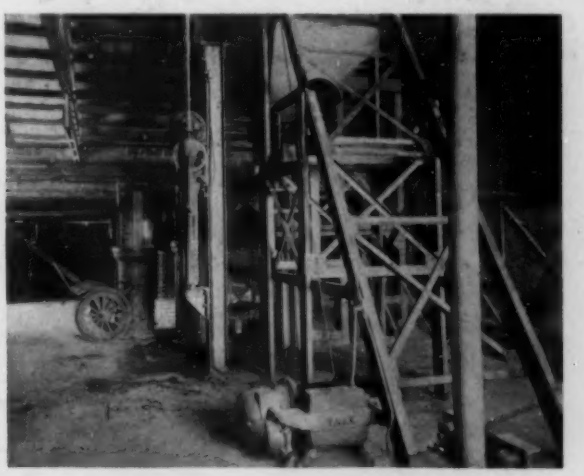
E. W. Chidester, manager of the Parkersburg, W. Va., plant

Pipe are moved into steam curing kilns by rubber-tired buggies, for an overnight steaming period. There are three kilns, two 40- x 100-ft. and the other 20- x 100 ft. After steaming, the pipe are rolled over 30-in. gauge track into stockpile.

(Continued on page 69)



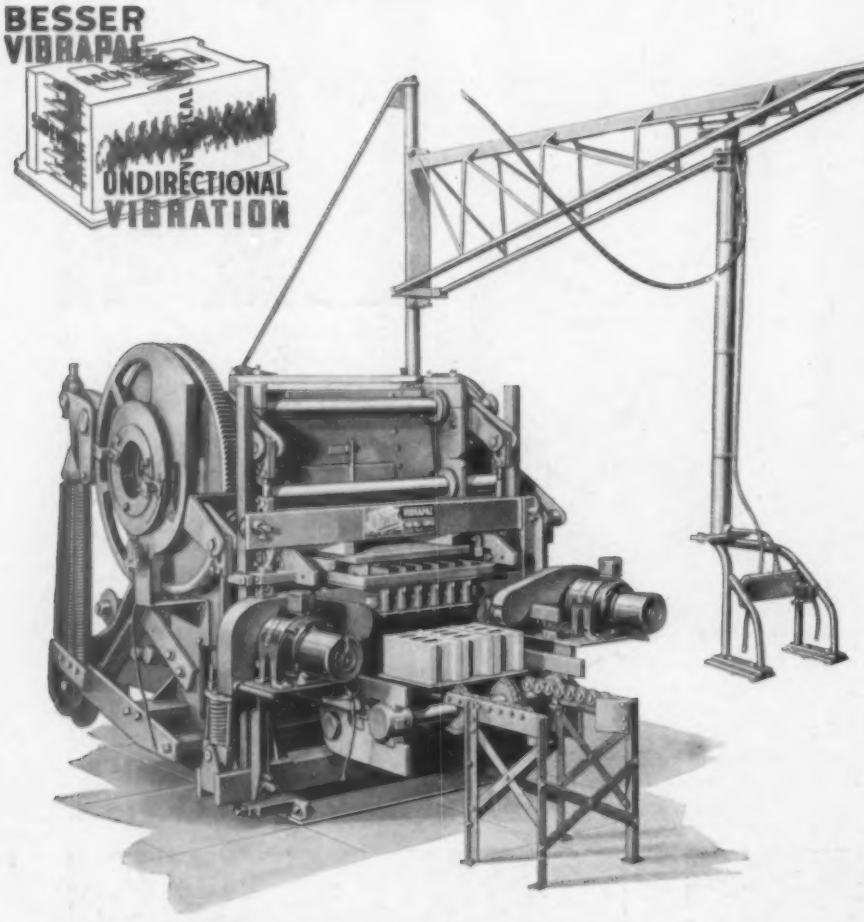
Pipe machine with skip hoist and mixer to the right. Note overhead feed hopper



Close-up of skip to elevate concrete. Skip hoist is driven by a gear-motor

BESSER in all out

BESSER VIBRAPACS HAVE PRODUCED MANY MILLIONS of CONCRETE BLOCKS for DEFENSE FACTORY and HOUSING CONSTRUCTION . . . . . .



When the war production effort first began, Besser Manufacturing Company was in position to contribute in an important way immediately with its regular product. Vibrapacs and other Besser concrete block machines were put to work making concrete blocks for defense construction in this country, in the Canal Zone and Newfoundland. More and more Vibrapacs have been and still are being installed to produce for defense. Besser Vibrapacs, with their big production capacity, are playing an important part in producing concrete blocks to conserve critical building materials. Factory space and facilities have now been increased for production also on government armament contracts. This is an all-out effort for the speedy production of essential defense equipment.

Besser Super Automatic Plain Pallet Vibrapac with Power Off-Bearing Hoist. Capacity 600 8"x8"x16" per hour made 3 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets.

Below is the new Besser factory annex which provides additional facilities for production on Naval defense contracts

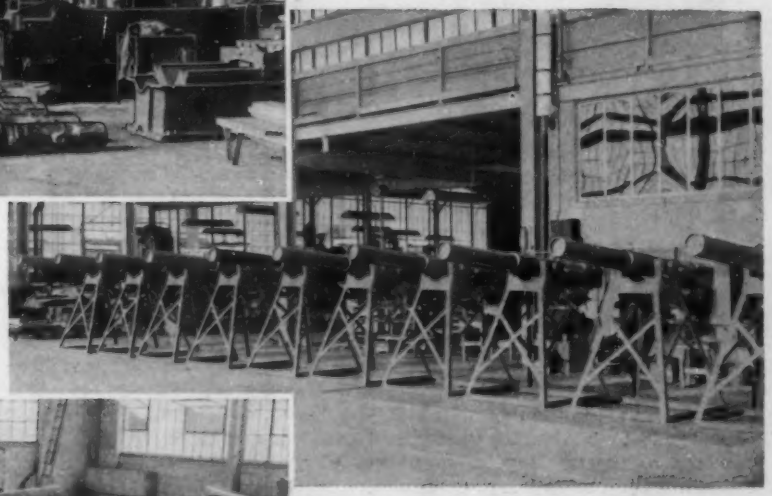


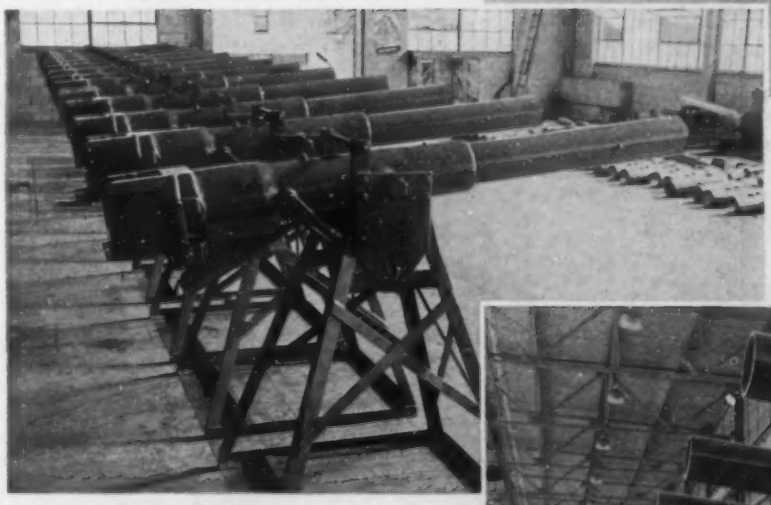
DEFENSE Production

FULL SPEED AHEAD ON NAVAL ARMAMENT WORK . . . . .

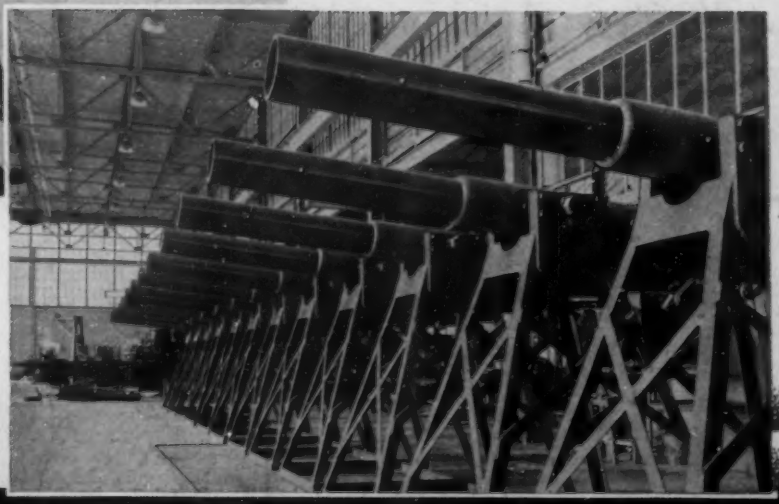


LEFT: Corner of
BESSER Machine Shop





Naval Loading Machines
Made in the BESSER Factory





BESSER EMPLOYEES
ARE CONTRIBUTING
100% for
VICTORY BONDS

BESSER MANUFACTURING CO.

ALPENA . . . . . MICHIGAN

Selling Block to the Coal Mines

Chartiers Cinder Block Co. markets nearly two-thirds of its production to the coal mines. New block plant has a production of 5000 8-in. units in 8 hrs.

By BROR NORDBERG



Neon-illuminated sign, advertising the company's products, erected along the highway near plant

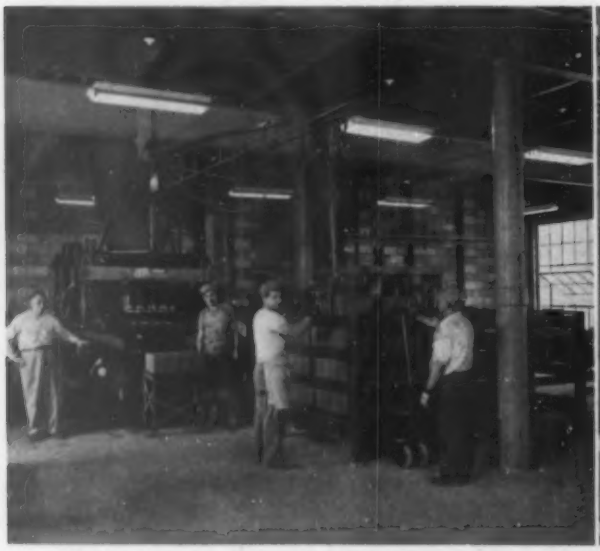
IN THE CENTER of the bituminous coal mining district southwest of Pittsburgh, the Chartiers Cinder Block Co., Houston, Penn., is marketing about two-thirds of its production of cinder block for construction in the mines. Cinder concrete units are used in the mines for building walls to block off passages and rooms, as the workings progress, in controlling ventilation. Originally, clay brick were used extensively in these walls, but the managements of the mining companies are being sold on the use of concrete masonry. Lower costs of the stop walls, due principally to reduced labor, are an important consideration in promoting sales.

Retail sales to the mines are made by a company salesman who operates within a 40-mile radius of the plant. Houston itself, with a population of only 1600, is not large enough to justify a cinder block plant of such size for the usual masonry construction, aside from the mining volume. However, it is located on the Canonsburg-Houston highway between Washington, Penna., north to Pittsburgh, and is one of a great many towns and cities that can be reached by truck haul. Pittsburgh is 20 miles northeast. From 25 to 35 percent of total sales are for house foundations on approved projects and for above grade commercial and industrial structures. Concrete houses were being promoted until the war broke and a few of them had been built. War industry factories are now taking a considerable part of the production.

New Block Plant

This year the company built an entirely new plant to increase its capacity and supplant one that had no room for expansion or for adequate stockpiling. The old plant had a production of 1500 8-in. units in 8 hr., and was kept in operation until the new plant was ready. Capacity in the new plant is now close to 5000 in 8 hr.

The site chosen for the new plant presented construction complications, because the seven-acre property is low and has poor drainage, particularly at one end. It was preferred to





Left: Interior of new plant showing vibrating type, high production block machine with pneumatic off-bearer, George Goulrand, Jr., manager, on the left. Right: Bin and batcher, above, and 40-cu. ft. mixer, below, serve block machine

JAEGERS DO what others merely claim



THE JAEGER MACHINE COMPANY 603 DUBLIN AVENUE COLUMBUS, OHIO



New plant of Chartiers Cinder Block Co., has a capacity of 5000 units daily. Note neat stockpiling and attractive signs

any other available location because it adjoins the main north-south highway where the plant to be built would be an advertisement in itself that could hardly be overlooked.

It was necessary to pour an 8-in. reinforced concrete slab floor and support the main structure, 50- x 60-ft., on piles. The piles were driven 11 to 13 ft. down to strike bedrock, and 27 of them had to be driven under the part of the slab that was to support the block machinery.

Manufacturing Methods and Equipment

Cinders require no crushing as they come from the source, a continuous steel furnace in Washington, Penn. They are hauled to the plant in trucks and can either be dumped into a hopper for direct delivery by bucket elevator into the batching bin or they are stockpiled. The batching plant is Blaw-Knox, with a 3-compartment, 105-ton overhead bin that provides storage for cinders in one size, Pottsco lightweight aggregate, and crushed stone which includes screenings. The batcher is a 1½-cu. yd. weigh batcher, and the mixer is a 40-cu. ft. Besser machine which discharges concrete by gravity into the block machine hopper. Cement is stocked in cloth sacks, and mixing water is controlled by a hand valve. The block machine is a Besser Vibrapac, with a pneumatic off-bearer to place the block on racks which are handled into steam curing kilns by a Barrett-Cravens lift truck. Kiln capacity is 7000 8- x 8- x 16-in. equivalent units in four 10- x 80-ft. kilns.

Yard storage covers about four acres. Products manufactured are the usual line of 16-in. units in 4-, 6- and 8-in. thicknesses, sash block, bull nose block, etc. Requirements for the mining companies differ. Some prefer solid block; some the hollow units, and thicknesses from 4- to 8-in. are specified.

In addition to newspaper space, advertising consists of the plant it-

(Continued on page 69)

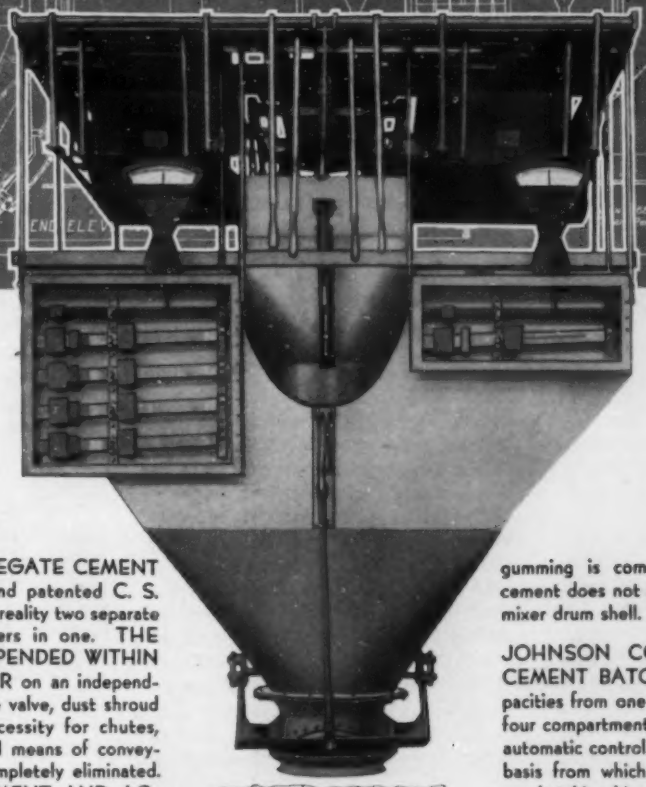

YOU ARE CORDIALLY INVITED TO ATTEND THE GALA
GRAND OPENING
OF THE
CHARTIERS CINDER BLOCK CO.
On the Canonsburg-Houston Road
WEDNESDAY, JULY 15TH
FREE SOUVENIR
REGISTERED KEY CASE
CREED OF A CONCRETE MAN
GRAND OPENING DEMONSTRATION OF THE W. W. LAWRENCE PAINT CO.
SOMETHING TO CROW ABOUT
HOUSE PAINT

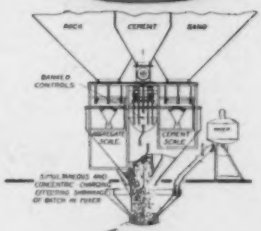
Newspaper advertising announcing the opening of the new concrete products plant

JOHNSON

CONCENTRIC AGGREGATE CEMENT BATCHER







THE CONCENTRIC AGGREGATE CEMENT BATCHER is an exclusive and patented C. S. JOHNSON CO. product—in reality two separate and independent weigh batchers in one. THE CEMENT HOPPER IS SUSPENDED WITHIN THE AGGREGATE HOPPER on an independent scale, has its own discharge valve, dust shroud and operating parts. The necessity for chutes, screw feed or other mechanical means of conveying cement to the mixer is completely eliminated. CONTROL OF BOTH CEMENT AND AGGREGATE IS BROUGHT TO A CENTRAL POINT.

INTERMINGLING OF AGGREGATE AND CEMENT during discharge assures 20% PRE-MIXING AND PRE-SHRINKAGE and a batch equal to the maximum rated capacity of your mixer. Cement dusting is reduced to minimum. Mixer gumming is completely eliminated because the cement does not contact the charging openings or mixer drum shell.

JOHNSON CONCENTRIC AGGREGATE CEMENT BATCHERS are constructed with capacities from one to five yards with two, three, or four compartments—manual, semi-automatic or full automatic control. Two standard types represent a basis from which modification and adaptation to any batching bin can readily be made—Model TY 162 where bin bottom and fill valves are arranged in square or rectangular order, and Model TY 164 where bin bottom and fill valves are in line or tandem.

JOHNSON MAKES BATCHERS TO SUIT YOUR NEEDS AND SPECIFICATIONS

MORE CONCRETE HAS BEEN POURED THROUGH JOHNSON CENTRAL MIX PLANTS THAN ALL OTHER PLANTS COMBINED



CENTRAL MIX PLANTS
CEMENT HANDLING EQUIPMENT
CONCRETE BUCKETS

C.S. JOHNSON CO.
CHAMPAIGN ILLINOIS

ROADBUILDERS' BINS AND BATCHERS
SMALL MIXER BATCHING UNITS

Ready Mix Concrete Trucks Have Dual Function

New Enterprise Stone & Lime Co. branches into ready mixed concrete business to increase market for quarry products

LOCAL CIRCUMSTANCES can often make ready-mixed concrete a worthwhile enterprise, or sideline business, even though location of the plant is not in or near to a large city. There is a need for good concrete in many outlying communities which can be filled by a small ready-mixed concrete producer.

New Enterprise Stone and Lime Co., New Enterprise, Penn., which operates crushed stone plants at Ashcom, Roaring Spring and Waterside, Penn., and a sand plant at Everett, recognized its possibilities as a side-line several years ago and is in the business on a limited scale. All of these towns are in the Allegheny mountains and none of them have a population as high as 3000.

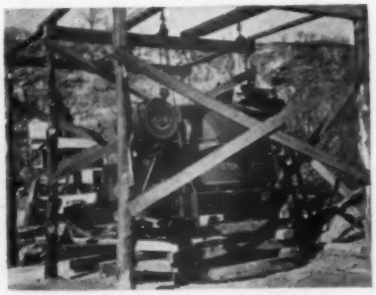
Officials of the company became interested in ready-mixed concrete, from seeing it used in Altoona and planned to go into it several years ago. The company had the largest contract for crushed stone to be used in construction of the Pennsylvania Turnpike and installed batching equipment at its Ashcom plant for weighing out batched aggregates for the contractors and batching concrete mixes. About 70,000 tons of crushed stone was put through these batching plants.

Two 300-bbl. Butler cement batching plants and two Blaw-Knox aggregates plants, holding 105 tons in three compartments, were purchased to serve the contractors at that time, and for future use in ready-mixed concrete. Aggregates bins were equipped with steam jets for winter operation.

One of the cement batching plants and an aggregates plant were moved to the Roaring Spring crushed stone plant about 35 miles north of Ashcom and two ready-mixed concrete trucks are now in service. They are 2½- and 3½-cu. yd. T. L. Smith high dump mixer drums on White chassis. The company is therefore probably the smallest producer of ready-mixed concrete in the country to have bulk cement handling equipment.



Pouring concrete at Roaring Spring plant to raise aggregates batching unit so that it will be high enough for high-dump truck to get under



Showing timber hoist supporting structure used for interchanging bodies on trucks

There are no big projects, but many small quantity orders are handled out of both plants. Natural sand is trucked to both plants from Everett and the usual procedure is to stagger orders out of each plant on alternate days. The mixers are at each location on alternate days, unless a bigger job than the ordinary comes up.

Turnpike Job Introduces Ready Mixed Concrete

Some of the contractors working on the Pennsylvania Turnpike poured concrete from transit mixers which helped introduce it commercially. It is doubtful if many people living within the operating radius of the Ashcom and Roaring Springs plants did not at some time watch the highway construction. There they could see the contractors' transit mixers in operation and observe the advantages. A salesman is on the road selling all the company's products, but a good percentage of the concrete sales are made at the plant offices. When inquiry is made for stone for concrete that person is always a prospect for ready-mixed concrete.

Dump Body Replaces Mixer Drum

Sometimes the mixer trucks are rented out in Altoona when the concern there is in need of additional capacity. When no concrete orders are on hand, the mixer trucks are not allowed to be idle, with the present demand for haulage equipment.

Mixer drums are taken off the chassis and beds are substituted to haul other materials. The 2½-cu. yd. mixer was purchased to put on an existing chassis and is readily removed and replaced by a 3-cu. yd. dump body bed that measures 6- x 9-ft. It is equipped with a St. Paul hoist and will haul up to seven tons of stone. In converting back to a

mixer truck, the sub-frame lifts the hoist off from the main frame.

The 3½-cu. yd. mixer is displaced by a flat bed that holds nine tons and is used to haul agricultural limestone in bags and other stone products. This change is made by the removal of eight bolts holding the angle iron framework, removal of the mixer, and fitting on the flat bed which is held by the same bolts. It takes a half hour to make this change and an hour to convert the dump truck.

A special rig was set up to make the conversions. The truck backs up under the rig, bolts are removed and the body is raised by two chain hoists. Then the chassis backs under another rig where the other body is let down and bolted to it. The body not in use is supported under the hoists on cross ties.

Merchandising

(Continued from page 66)

self, with a large sign overhead, and an illuminated display sign at a bend in the highway some distance from the plant. This sign is V-shaped to give it prominence to traffic in both directions, and the main sign measures 24 ft. wide and 16 ft. high. It is topped with a neon-lighted 6- x 12-ft. replica of a cinder block, which is kept lighted from 6 p. m. to 1 a. m. in the Winter months and from 8 p. m. to 1 a. m. in the Summer. The sign represents an investment of $1200 and its maintenance consists of a monthly charge of about $10 for lighting it, with a $40 annual rental charge for leasing the property on which it stands.

The company also is a prolific user of special advertising matter, such as calendars, mechanical pencils, automatic scratch pads, etc. Storage space was provided in the new plant for a line of builders supplies, such as steel sash, paints and waterproofing. A dealer organization handles much of the sales, outside of retail orders to the mines closed by the salesman. A grand opening was held at the plant on July 15, 1942, and a full page advertisement was carried in *The Canonsburg Notes* inviting every man and woman in the community to visit the plant on the date set.

George Gouirand, Jr., manager, was once a coal miner himself. When the miners had a strike back in 1922, he started to work in a concrete block plant at Springdale, Penn. He went into business, in a partnership arrangement, in 1923 and purchased his partner's interest in 1936.

Concrete Pipe

(Continued from page 61)

Reinforcing cages, shaped on a Universal power-driven shaping machine, are spot welded by a Thomson-Gibb electric spot welder. Most of the shipments are at present going into defense projects.

E. W. Chidester, manager of the Parkersburg plant, is also manager of the New Martinsville, W. Va., plant. He is new to the manufacturing end of the concrete pipe business but has had years of experience on the purchasing end. A graduate in engineering from the University of West Virginia where he studied concrete design, Mr. Chidester was assistant construction engineer for the West Virginia Highway Department for four years. Prior to his present affiliation, he was active as a contractor. R. S. Hutchison, formerly superintendent of the New Martinsville plant, is now in charge of operations at Parkersburg.

Bullet Resistance of Concrete Masonry Walls

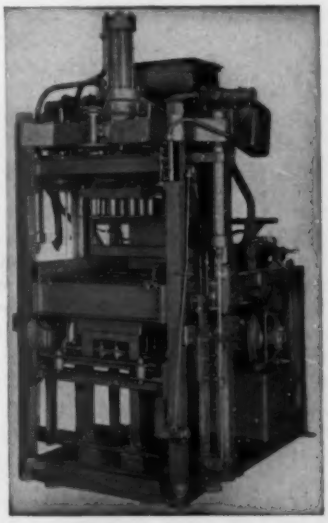
CLEVELAND BUILDERS SUPPLY CO., Cleveland, Ohio, held a unique demonstration to determine how "celocrete" concrete block would resist the penetration of rifle bullets. The idea was to prove that a wall of the material laid around vital electric transformers or generators would be more durable than sandbags as a protection against sabotage.

Police officers and coastguardsmen fired service revolvers, automatics and 30-30 rifles into the wall. None of the bullets pierced the block even when well-grouped. The test walls were 16 in. thick and measured 8 x 12 ft., with the core holes filled with sand. No bullet penetrated more than 10 in. even when fired from a 30-30 rifle as close as 25 ft. away. Many notables attended the demonstration.

Reinforcing Metal for Concrete Burial Vaults

MANUFACTURERS of concrete burial vaults may continue to use metal reinforcing now in inventory until December 31, 1942, under amendment 1 to L-64 issued by the War Production Board. The amendment restricts the use of such reinforcing metal to 15 lb. to a vault and prohibits manufacturers from buying any additional steel or iron except that one manufacturer of vaults may sell excessive inventory to another vault manufacturer. The original order contained a shutoff date of July 1, 1942, for the use of reinforcing metal.

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO



"ANCHOR"
Complete
EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
G. M. Friel, Mgr. COLUMBUS, OHIO

Break War Construction Bottle-Neck By Using Concrete Products

SHORTAGES in certain lumber sizes and grades are becoming so serious that the federal government has had to step in to direct their use into channels wholly devoted to military use. It is a real bottleneck restricting the war construction program, but it could be practically eliminated if the war and navy departments and other government agencies would utilize new materials and a vast reservoir of labor which has not been drawn upon to anywhere near its full capacity. More masonry, both concrete block and brick products, and unemployed masons could be used to relieve the shortage of lumber and carpenter labor.

It has been estimated that the concrete products industry, comprising 800 large capacity plants and 3000 relatively small producers, have a combined capacity of 1400 million average size (8- x 8- x 16-in.) units annually. The large capacity plants each have an average capacity of 1,000,000 units and the smaller plants, 200,000 units. During 1941, the industry produced approximately 500 million units, indicating an unused capacity of about 65 percent, although much of the unused capacity represents older equipment but in good operating condition.

Raw materials for concrete masonry materials are plentiful and geographically distributed so as to require a minimum of transportation. Adequate stocks of concrete units are available.

It has been suggested that concrete products be used for housing war workers and to build army and navy officers' quarters in place of lumber. At ordnance plants, lumber and steel has been largely used for purposes where concrete masonry could be employed. In the cantonment program, all the walls could be built of concrete masonry, the first floors could be of concrete laid on the ground, and roofs would be of wood construction. Alternate sections of cantonments could use concrete masonry and lumber. Another suggestion is to establish a policy of constructing two-story structures of lumber and all one-story structures, such as mess halls, warehouses and utility buildings of concrete masonry. At airports, walls of hangars, barracks and utility buildings could be built of concrete masonry units.

Concrete masonry can be speedily erected; it uses plentiful, non-critical materials; nails are not required; it is fire-safe; it is more durable; presents a good appearance; and the cost is practically the same as wooden construction, considering all factors. Why has the government failed to make more use of concrete masonry?

Pressure Concrete Pipe for Ordnance Plant

AMERICAN PIPE AND CONSTRUCTION Co., Los Angeles, Calif., one of the largest manufacturers of reinforced concrete pipe in the country, has set up a temporary plant near Sauk City, Wis., to make concrete pipe for a large ordnance plant. The pipe will be the pressure type, for use in bringing in a water supply from the Wisconsin river. M. M. Benjamin, of Tacoma, Wash., is general superintendent and has taken up residence in Madison, Wis., with his family.

Fifty Years

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, celebrating its 50th year of continuous business, has sent its friends a handsome book, bound in blue suede, 9½ x 12 in., with an embossed "Medusa" head in white. The first chapter deals with the company in its formative years when it was the Sandusky Cement Co. The contribution of the Newberry brothers to the portland cement industry is skillfully told.

Included in the volume is a lot of material often overlooked by historians in this kind of a job; for example there is quite a bit of mythology in order to tell the story of how the "Medusa" trade-mark came into use by the company. Medusa was the woman whose glance turned living creatures into stone. So, as the writer says: "What name could better symbolize the modern magic by which portland cements create edifices and engineering works as solid as native rock?"

Another chapter or section explains why the sites of the various plants came to be selected; how the first white portland cement came to be made. Then follows descriptions of the various plants and when and how they came into the Medusa picture. Portraits of the plant superintendents are included. And of course there are descriptions of the various products, which are more numerous than those of the average cement company, since they include water-proofing compounds, paints, floor coatings, etc.—15 in all.

This is something more than an advertising splurge. It contains enough historical data to find a place in the library of any collector. It contains an album of photographs of company officers and directors that will be treasured by the friends of these men. Altogether it is a nice job.

O.P.A. Cement Committee

LEON HENDERSON, price administrator, Washington, D. C., has appointed 18 executives in the cement industry to serve on an industry advisory committee on portland cement for the Office of Price Administration. The function of the committee will be to advise and consult with the O.P.A. with respect to the regulation of sales and deliveries of portland cement, which are subject to the provisions of the general maximum price regulation. The committee follows: M. Moss Alexander, president, Missouri Portland Cement Co., St. Louis, Mo.; Garner A. Beckett, president, Riverside Cement Co., Los Angeles, Calif.; John C. Bowen, vice-president, Lehigh Portland Cement Co., Allentown, Penn.; F. M. Coogan, vice-president, Alpha Portland Cement Co., Easton, Penn.; P. G. Dawson, vice-president and treasurer, Medusa Portland Cement Co., Cleveland, Ohio; B. W. Druckenmiller, vice-president and general sales manager, Pennsylvania-Dixie Cement Corp., New York, N. Y.; W. B. Elcock, president, general manager and purchasing agent, Southern States Portland Cement Co., Rockmart, Ga.; Henry J. Kaiser, president, The Permanente Corp., Oakland, Calif.; E. P. Lucas, president, Superior Portland Cement, Inc., Seattle, Wash.; J. F. Neylan, general sales manager, Lone Star Cement Corp., New York, N. Y.; George H. Reiter, vice-president, Universal Atlas Cement Co., New York, N. Y.; W. C. Russell, vice-president and general manager, Peerless Cement Corp., Detroit, Mich.; Harold M. Scott, president, Keystone Portland Cement Co., Philadelphia, Penn.; Smith W. Storey, president, Consolidated Cement Corp., Chicago, Ill.; L. T. Sunderland, president, Ashgrove Lime and Portland Cement Co., Kansas City, Mo.; H. H. Titsworth, president, Glens Falls Portland Cement Co., Glens Falls, N. Y.; H. O. Warner, vice-president and general sales manager, Ideal Cement Co., Denver, Colo.; and Gus S. Wortham, president, Longhorn Portland Cement Co., Houston, Texas.

WAR PRODUCTION PROJECTS NEED TRANSPORT MIXERS

EARLY DELIVERIES MADE ON HIGH PRIORITY RATED ORDERS



One of thirty Transport Mixers that truck mixed 400,000 cu. yds. on a midwestern Ordnance Plant.

The speed required by the war program demands early delivery on construction projects. After delivery the contractor must have concrete placed in a hurry.

Transport Mixers Answer This Demand!

Full open top design for fast loading—Revolving helical mixing blades—mixing while loading—mix faster and produce more uniform concrete—positive water control—combination side and rear discharge for ease of placing concrete—inexpensive to own.

Call or Wire for Delivery Date

CONCRETE TRANSPORT MIXER CO. INC.

630 Rosedale Ave., DELmar 3900, St. Louis, Mo.

Relay Cement to Expedite Delivery

MONOLITH PORTLAND CEMENT CO., Los Angeles, Calif., has a transfer arrangement at Lone Pine, Calif., to speed up cement deliveries from the mill at Monolith to a Navy ammunition depot in Nevada. A maximum of 20 carloads per day will be shipped to Lone Pine where the cement will be transferred into trailer-trucks. About 45 trucks will be in service.

National Safety Congress

NATIONAL SAFETY CONGRESS will hold its 31st National Safety Congress and Exposition October 27-29 in Chicago. It will be housed in the Sherman, LaSalle and Morrison hotels, with headquarters at the Sherman. The changes in date and location were necessary because the government has taken over the Stevens and Congress hotels where the Congress originally was to have been held. There will be 200 sessions with 500 program participants.

Pipe Plant for War

NELSON CONCRETE CULVERT CO., Champaign, Ill., has set up a plant for the manufacture of concrete pipe near Newport, Ark., the pipe to be used for airport drainage. The plant is under the direction of W. A. Underhill and will turn out 7000 tons of pipe in 60 days.

Concrete Tile Plant

LOT TILE CO., DeSoto, Kan., is completing the construction of a new concrete tile plant.

To Move Block Plant

H. M. BRUNK, owner of a cinder block plant at Hyattsville, Md., is moving his plant to a new location as the result of an injunction charging that he was operating in a residential zone. The injunction was not contested.

Chilean Government Buys Two Cement Plants

THE GOVERNMENT of Chile has purchased two United States cement plants which will probably be operated by contractors, to relieve the shortage of cement in that country. Chile has only one plant which could not produce half of the country's needs, and cement has been imported continuously the past year from Canada and Argentina.

Concrete Pavement Yardage

AWARDS of concrete pavement for July, 1942, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During July, 1942
Roads	1,926,974
Streets and alleys	1,654,576
Airports	11,365,543
Total	14,947,093

Approve Express Highway As Defense Job

AUTHORITY has been granted by the War Department for the construction of the Detroit industrial defense express highway under provisions of the Defense Highway Act of 1941. It will cost nearly $12,000,000, including right-of-way, and will link two of the nation's largest war plants. The War Department certification provides 75 percent of the construction cost from special defense highway appropriations. Michigan will pay the remaining 25 percent of construction costs and also will defray right-of-way acquirement. It is expected that the state's first large express highway will be completed by July 1, 1943.

The new highway will comprise two divided lanes of 24-ft. concrete pavement, extending a total distance of 16.1 miles. There will be 16 road separations, two railroad separations and one bridge.

It has been announced by Highway Commissioner G. Donald Kennedy that regular federal aid funds now obligated would be reinstated for other war use, such as recapping old concrete highways beginning to break up under heavy war traffic.

Milwaukee Concern Gets Big Ready Mix Contracts

CENTRAL READY MIXED CONCRETE CO., Milwaukee, Wis., has been going far afield to produce ready-mixed concrete for big government and industrial construction jobs. The company recently completed the production of 209,000 cu. yd. of concrete for an ordnance plant in Texas 31 days ahead of schedule. The plant installed for the contract was a portable, central mixing plant, which is said to be the first of its kind in the United States. Its capacity was 150 cu. yd. per hour which is much greater than the company's permanent plant capacity in Milwaukee. The plant was equipped by the Butler Bin Co., The T. L. Smith Co. and Chain Belt Co.

Previous to this contract the company produced 127,000 cu. yd. of concrete for an ordnance plant in Indiana. M. C. Kolinski is president and general manager of the company and W. F. Stuewe is vice-president. Willard L. Schunck, assistant general manager, handled the Texas job.

Install Block Machine

CLAIR HALDERMAN has installed a Multiplex block machine at his plant in North Baltimore, Ohio. The unit has a capacity of 700 block per day.



Type of batching equipment used at Camp Chaffee job

Large Depreciation Reserve for Ready Mix Equipment

Shaw Coal and Material Co. has big war contracts for ready mixed concrete

By LON FANALD

AS A SAFEGUARD against large defense orders upsetting a well-balanced future program of a successful small business, J. Shaw, owner and manager of the Shaw Coal and Material Co., Kansas City, Mo., has set up increased depreciation reserves. It is anticipated that this policy will result in the company coming out of the defense contract boom with stronger finances and a good supply of new machinery and equipment to carry on post-war business.

The coal company was organized in 1926. A building material branch, featuring ready mixed concrete was established in 1936. Prior to the recent flood of defense orders, the Shaw company was engaged principally in supplying concrete for Kansas City building construction and pavement work. With this experience, the company was ready to meet the demand for concrete offered by big defense contracts.

As these huge contracts required more equipment, more men, and a larger plant, the problem facing the company was not to over-expand and yet be in position to handle the big jobs as they came along. To do this, Mr. Shaw decided on a policy of a 40 to 50 percent reserve for depreciation all down the line, from scales to trucks.

Before this company had completed its first contract on an airport at Kansas City, it was delivering 700 cu. yd. of concrete daily on a $400,000 cantonment job in Arkansas. This cantonment contract required 50 additional men in addition to much stationary equipment at the site. Following completion of this job, the equipment was moved to another war project in the same territory.

While work on the war contracts is under way, the regular business of the company is being pushed in the Kansas City area. Special attention in the Kansas City territory is being given to business other than defense and the home office is working towards a larger non-war volume. By the end of 1942, the first orders of boom-purchased equipment and machinery will be covered by a 100 percent reserve. Another six months will care for the balance.

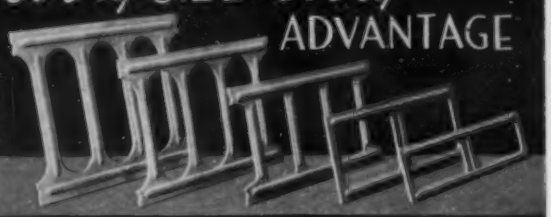
At the Kansas City plant, the company has two 3-cu. yd. and eight 2-cu. yd. mixer trucks furnished by T. L. Smith Co. This does not include the equipment used on the government job as the details could not be revealed. The batching equipment at the Kansas City plant has a capacity of 100 tons. Fairbanks-Morse weighing equipment is used.



Weighing equipment at Kansas City. Miss Frances Belzer is the official weighmaster

COMMERCIAL PRESTEEL PALLETS

Every SIZE · *Every* ADVANTAGE



Produces better blocks with sharp edges and mortar grooves.

A light weight pallet which fits closer to the core box.

Less storage space required.

Lowest investment and maintenance cost.

Commercial PRESTEEL Close Clearance Pallets are more durable because they are formed cold, under pressure increasing their strength.

Write for illustrated catalog.

The COMMERCIAL SHEARING & STAMPING COMPANY

YOUNGSTOWN, OHIO.

★

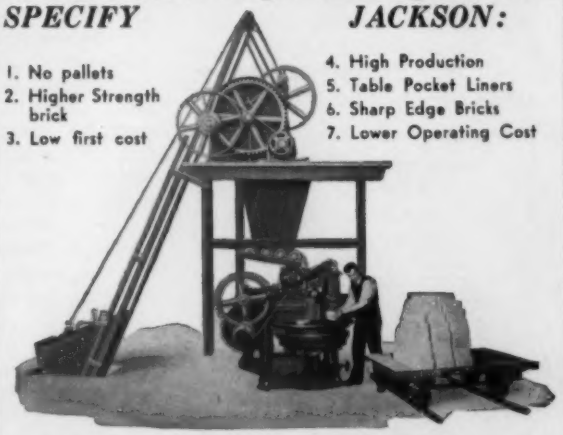
You have to look to ROCK PRODUCTS for Leadership in the Industry

★

1 JACKSON BRICK MACHINE = 1 COMPLETE EFFICIENT PLANT

Seven Reasons Why It Will Pay You To SPECIFY JACKSON:

1. No pallets
2. Higher Strength brick
3. Low first cost
4. High Production
5. Table Pocket Liners
6. Sharp Edge Bricks
7. Lower Operating Cost



No other Brick Machine can give you all these advantages. The JACKSON Model A produces up to 28,000 brick per day . . . the Model C up to 14,000 brick per day. Check up on this *low-cost* profit-making machine *now. WRITE FOR BULLETIN J-42 TODAY.*

JACKSON & CHURCH COMPANY

SAGINAW, MICHIGAN, U.S.A.

. . . *Yet*

High Priorities Plus MULTIPLEX Service Still Assure Proper Upkeep of Your

MULTIPLEX Concrete Machinery

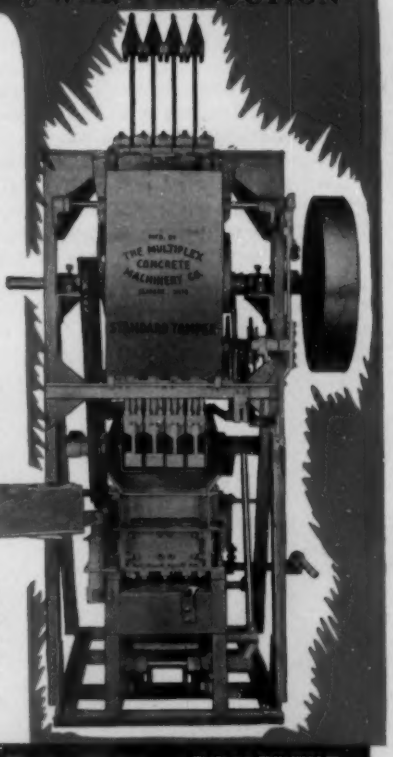
SURE — We're doing everything in our power on straight U.S. War Production.

But . . .

Uncle Sam has provided you with good priorities to enable you to keep your MULTIPLEX machines in good running order.

Even though we are "busy as can be" on war production orders, we are also ready to furnish necessary repairs and replacements on these priorities to keep your MULTIPLEX "ship-shape."

Write or wire us if you need our assistance.



MULTIPLEX CONCRETE MACHINERY

ELMORE, OHIO

NEW EQUIPMENT

Constant-Level Lubricator

OIL-RITE CORPORATION, Milwaukee, Wis., has announced an improved constant level lubricator which holds a visible reserve supply of oil and

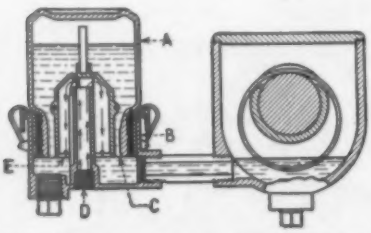


Diagram showing how constant level lubricator operates

releases it automatically just as much as is needed to maintain a pre-determined level of lubricant. It is used on electric motors, pillow blocks, pumps, ventilating fans, and other machinery parts requiring an ample supply of lubrication.

It is said to comprise only three parts: a base of cast Zamak metal with an integral open air vent which extends part way up into the oil reservoir, an inverted bell over the vent of the same metal, and a glass dome reservoir.

When the reservoir (A) in the accompanying diagram is filled and inverted into position on the base (B), the lower edge (E) of the inverted bucket or bell determines the oil level which the lubricator will maintain. When the level falls below this point, air from the vent (D) escapes under the side of the bell, as at (C), up to the top of the lubricator, permitting oil to flow down until the level to be maintained again seals across the base of the bell.

Double Power Plant Diesel Locomotive

THE H. K. PORTER CO., INC., Pittsburgh, Penn., has announced a new 65-ton, double power plant locomotive for general industrial and switching purposes. It is powered with two Cummins supercharged Diesel engines developing 200-hp. each. The locomotive has a tractive force of 39,000 lb. at 30 percent adhesion. Overall size is 12 ft. high by 9 ft. 6-in. wide by 33 ft. long, from bumper to bumper. Total weight is 130,000 lb. It is built for both standard and 36-in. gauge track.

Each engine is fitted with a fuel distributor, forced feed lubrication, centrifugal cooling pump and a 32-volt automotive type starting motor with 350-volt generator. Radiators, engines and generators are mounted on a bedplate of heavy steel construction, designed so that the entire unit with bedplate can be removed readily. Main frames are of heavy steel construction.

There are eight drive wheels, each 33 in. in diameter, arranged on two 4-wheel trucks, each equipped with two high speed generators and four



Locomotive equipped with two 200 h.p. Diesel engines

high speed motors. Each axle is driven by one motor with reduction gears, the gear ratio being 14.7 to one.

Mount Crane on Rubber Tires

THE OSGOOD CO., Marion, Ohio, has brought out Model 805 WM Mobilcrane which is designed for rapid movement in handling materials. It is a one-man, one-engine operated crane mounted on pneumatic, rubber-tired wheels.

All operating functions of the machine are controlled by air power. Independent travel, independent boom hoist, wide chassis, 18 rubber-tired wheels, hydraulic steering, and air brakes are features of this crane.

A wide chassis and 12 wheels at the rear and six at the front make it possible to lift loads up to 30 tons over the side of the machine as well as the ends, and carry the load to the desired location. It has a tandem rear wheel drive unit which consists of a chain case and cover carrying six wheels, three forward and three back, with four on the outside of the chassis and two inside. The drive unit is arranged to oscillate up and down which absorbs shock and keeps the machine level when travelling over rough or uneven ground. Drive from the differential shaft to the driving axles is by heavy roller chain.

Emergency First-Aid

MINE SAFETY APPLIANCE CO., Pittsburgh, Penn., has added two first-aid items to its list of products. One is a folding stretcher outfit and the other is a wood traction splint.

The folding stretcher is 49-in. long when folded, but may be quickly opened to full size army type. Included in the weather and dust-proof steel case are the folding stretcher, a wool and a rubber blanket, four wood splints, two chemical hot pads and a 16-unit first-aid kit. An instruction sheet is included.

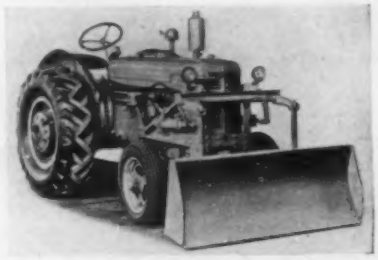
The wood traction splint is designed for use in supporting fractures of the arms or legs, according to the accepted traction method prescribed by the American Red Cross.



Crane operating on rubber tires can lift up to 30-ton loads

Small "Bulldozer"

BAKER MANUFACTURING CO., Springfield, Ill., has brought out a small bulldozer known as the model 282. In the illustration the bulldozer is



High-speed bulldozer-tractor combination which is adaptable for quarry and pit operations

shown attached to an International I-4 wheeled tractor. It is hydraulically controlled, being powered by a Baker rear-power-take-off hydraulic pump unit. The blade, which is lifted and lowered by dual cylinder, makes a 6 in. deep cut. The mold-board, 24 in. wide by 66 in. long, can be raised 12½ in.

Its speed, flexibility and size are said to make it adaptable for use in mines for mucking and for conveyor feeding, and for use in sand and gravel pits and on quarry floors for clean-up and shovel-feeding work.

Four-Wheel Drive Tractor

CRESCENT TRUCK CO., Lebanon, Penn., has announced its Model "NTTD" tractor. It is powered by two electric motors through two heavy duty tractor drive units.



Electric tractor equipped with two motors and four-wheel drive

Features of this tractor include: four-wheel, extra large external contracting brakes, mounted on worm shaft, providing equal braking on all wheels. The frame is of heavy construction from standard plates and shapes, hot riveted and welded into rigid and mono-unit construction. This model has a drawbar pull of 800 lb., normal, 3600 lb. ultimate. Overall length is 84 in., wheel base 48 in., and overall height 59 in.

Travel is controlled by a lever-operated drum-type controller, which is interlocked automatically with the operator's seat and brake foot pedal. If the controller is left in any speed position, the handle must be brought to neutral, with brake released and operator seated, before power can be applied.

Converting Smaller Trucks For Heavy Duty Service

THORNTON TANDEM CO., Detroit, Mich., now has available four-wheel drive conversion units which are particularly adaptable for changing over lighter truck units for heavy duty hauling. With many truck users finding it difficult to secure the larger capacity haulage units due to the "freezing" of these types by priority rulings, they are now turning to the use of four-wheel drive conversion units. Trucks so converted have been used for several years in the ready mixed concrete, sand and gravel, and crushed stone industries.

It is claimed that with this conversion unit and its accompanying installation and reinforcements, a standard Chevrolet truck, for example, can be engineered up to a capacity of from 26,000 to 30,000 lb. G.V.W. capacity or combined weight of vehicle and payload. The Ford truck plus the four-rear-wheel drive is said to be capable of handling up to 30,000 lb. G.V.W. This drive as designed for 2 and 3-ton Dodge trucks converts them into heavy-duty units of from 28,000 to 34,000 lb. gross capacity. In tractor form, trailers are hauled with gross capacities of from 40,000 to 48,000 lb.

Plastic Insulation

THE EAGLE-PICHER LEAD CO., Cincinnati, Ohio, is now marketing a plastic mineral insulation, known as Eagle Super "66", which is suitable up to temperatures of 1800 deg. F. As a plastic, it may be easily applied and yet it is said to dry to form a cellular, highly-efficient, one-piece insulation that retains many of the distinctive characteristics of mineral wool, its chief constituent. It is only necessary to mix the material with water, spot it over the surface to be insulated, and trowel smoothly to the desired thickness. If used at temperatures up to 1200 deg. F., it can be removed, remixed, and reapplied when necessary.

The plastic insulating material has a "springy-ball" structure which is obtained by nodulating high temperature mineral into small pellets which are rolled to a predetermined size of correct tightness and density. Each pellet is a spongy, resilient mass, honey-combed by thousands of "dead air" cells. These pellets are then thoroughly mixed with long asbestos fiber and a specially prepared binder of great adhesive strength.



Light-type truck equipped with four-rear-wheel drive hauling crushed stone



West Coast Cement Shipments Soar

CALIFORNIA cement mills produced an average of 67,300 bbl. of finished cement daily during June, which is 93 percent of indicated capacity. This output lacked 8600 bbl. daily of equalling shipments and 11.4 percent of the shipments had to come from stocks. Similar conditions are prevailing in the Pacific Northwest, where inventories have been drained as low as two or three weeks' shipments.

Chemical Concern Buys Lime Plant

NYOTEX CHEMICAL CO., New York, N. Y., has purchased a lime plant near Houston, Texas, from the Pioneer Lime Co., for a reported consideration of $75,000. Pioneer Lime Co. had recently absorbed the Haden Lime Co., Houston. The chemical concern reportedly is considering a $6,000,000 development.

Patent Granted Covering Setting Rate of Cement

CASEIN, a constituent of milk and cheese, will slow down the setting rate of cement according to a patent (No. 2,290,956) granted to Ernst Gruenwald, New York, N. Y., Harvey R. Durbin, New Rochelle, N. Y., and William H. Tilley, Houston, Texas. The addition of 0.2 to 0.4 percent of casein to a concrete mix before pouring is said to slow the setting rate to a degree which will result in the maximum desirable properties of the concrete. The patent is assigned to the Lone Star Cement Corp.

Open Stone Quarry for Reservoir Construction

PICKENS' QUARRIES is opening a limestone quarry near Cushing, Okla., to produce about 56,000 cu. yd. of crushed stone for the construction of the Bluff Creek Reservoir. Production will be about 500 tons per day, produced under the supervision of Everette E. Pickens.

Increasing Gravel Output

KIRKWOOD SAND-GRAVEL CO., St. Louis, Mo., has taken over a sand and gravel pit formerly operated by the Independent Sand-Gravel Co. at Sterling, Kan. The company has a contract to supply aggregates for a government airport and is increasing the capacity of the plant. A new washing plant is being built, and a 2-cu. yd. Sauerman slackline cableway along with a dredge will excavate in the pit. The company is a subsidiary of the Rock Hill Stone and Gravel Co., St. Louis, Mo.

Buys Island of Gravel for War Construction

GEORGE VANG, head of the Iron City Sand and Gravel Corp., Pittsburgh, Penn., and the Ohio River Sand and Gravel Corp., Parkersburg, W. Va., has purchased Wolf Island in the river near Racine, Ohio. The island contains 13¼ acres and will be used to supply gravel for war plants in West Virginia.

Kelley Island to Build Million Dollar Lime Plant?

ANNOUNCEMENT has been made that the Defense Plant Corporation, RFC, is considering financing a new lime plant to be built at Ashtabula, Ohio, by the Kelley Island Lime and Transport Co., Cleveland, Ohio, at a cost of about $1,000,000.

To Produce Magnesite

WARNER CO., Philadelphia, Penn., is reported to have entered into a lease-purchase contract to construct and operate a plant for the production of magnesite utilizing a recently developed Warner process. The plant will be constructed by United Engineers and Constructors, Inc., and will be owned by the Defense Plant Corp.

Agstone in Illinois

AGRICULTURAL LIMESTONE spread by Illinois farmers in 1941 exceeded 2½ million tons, which is the all-time record for the State. A total of about 6 million acres of acid land has been spread in Illinois since the first experiments with limestone were started in 1903.

Fire in Gypsum Plant

FIRE in the roofing materials manufacturing plant of the U. S. Gypsum Co., Walch Road and Erie Ave., North Tonawanda, N. Y., caused damage estimated at $30,000.

Big Stone Contract for McArthur Lock

STURGEON BAY CO., Sturgeon Bay, Wis., has been awarded a contract to furnish the stone for construction of the new McArthur lock at Saulte Ste. Marie. The contract will keep the crushed stone plant in continuous operation well into 1943.

New Peak for Barite

AN ALL-TIME HIGH was reached in the mined production of crude barite in 1941, totalling 483,391 short tons, an increase of 24 percent over 1940, according to the Bureau of Mines. A new record also was established for the total value of domestic crude barite sold or used by producers in 1941, a total of $3,134,234, or an average value of $6.23 per ton.

Talc Grinding Plant

NEVADA MINERALS CO. has placed into operation a talc grinding plant at Cartago, Calif., nine miles below Big Pine. Fine talc trucked from the company's properties at Talcton, Nev., is being ground for the manufacture of high quality powders. Coarser material is shipped to Salt Lake City for use in war production plants. H. B. Kahn is superintendent of the mill.

To Produce Quartz

UNION REFRACTORIES CO., a newly incorporated firm, has purchased the assets of the old Ohio Quartz Co., Jackson, Ohio, and is making extensive repairs to the plant preparatory to resuming operations. The plant will manufacture fire and insulating brick. R. Green Annan and F. C. Strickland, both of Pittsburgh, are, respectively, president and vice-president of the new concern.

Slate Production

BUREAU OF MINES reports that 618,860 short tons of slate valued at $7,515,634 were sold at quarries in the United States in 1941, compiled from producers' reports. This was an increase of 31 percent in both quantity and value compared with 1940. Sales of crushed slate amounted to 437,670 short tons valued at $3,105,800.

Re-Open Mica Mine

GENERAL ELECTRIC CO. is re-opening the Palerma mica mine at North Groton, N. H., to produce mica which will be processed at the company's Bristol plant. L. W. Churchhill is in charge of production at the mine, which formerly had been operated by the Bristol Contracting Co.

Why HAZARD LAY-SET *Preformed* Lasts So Much Longer

Wires of Preformed Rope are at Rest

The wires and strands of a PREFORMED wire rope are not under such internal stress. They are at rest, ready to bend in the direction required of them without offering opposition further than resistance in the metal itself. Thus, it is easily seen that, given two ropes of the same diameter, construction and grade, the preformed rope will be more easily flexed around the sheave or drum. By the same reasoning, it is possible for a PREFORMED rope of higher grade or with wires of larger diameter to be flexed or bent with the same force required to bend a non-preformed wire rope of smaller or softer wires.



Preforming has added to the service of wire rope to all industry

PAGE 89

AND THEREBY CONSERVES STEEL FOR THE NATION

Here in a few words the "MODERN WIRE ROPE DIGEST," America's No. 1 authority on wire rope, explains *why* Hazard LAY-SET lasts so much longer—gives so much better service—than ordinary non-preformed wire rope. Proper preforming gives LAY-SET amazing fatigue resistance; kink-resisting flexibility; makes it easier and faster to reeve; safer to handle. LAY-SET PREFORMED is the greater-dollar-value rope.

LAY-SET PREFORMED is backed by 96 years of rope-making experience and by a company that has clung so tenaciously to quality materials, manufacture and service that it has on its books many firms who have used Hazard ropes continuously for 40, 50 and 60 years. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.

GREEN SIGNIFIES SAFETY

HAZARD WIRE ROPE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONN.

HAZARD LAY-SET *Preformed* WIRE ROPE

Selective Service

MEMBER COMPANIES have been mailed the full text of the public statement by the Selective Service System regarding the draft for the armed forces and maintenance of essential production by the National Sand and Gravel, National Crushed Stone, National Ready Mixed Concrete and the National Industrial Sand associations. Producers of "mined or quarried non-metallic materials used exclusively in construction" were excluded from the list of 34 essential industries. The National Sand and Gravel Association and the National Crushed Stone Association have filed a joint protest with the United States Employment Service. Pending a decision on the protest, essential occupations within the two industries are being listed by the United States Employment Service.

Industrial sand has been included among the essential industries, while the National Ready Mixed Concrete Association has decided not to ask for any special consideration. Here again, essential occupations within the industry are being listed with USES. The interpretation given to the listing of essential occupations is one of degree. It would mean that "essential" employes would be less difficult to retain.

Trucking Controls

COPIES of order ODT No. 17 issued on July 23 by Joseph B. Eastman, Director of Defense Transportation, effective August 1, 1942, have been mailed to member companies by the National Sand and Gravel Association and the National Industrial Sand Association. Specific exemptions are granted to the motor transportation of mine products in General Permit ODT No. 17-5, to include the sand and gravel and industrial sand industries when operating under WPB.

The WPB has cleared the way for the manufacture of not more than 500 giant "Off-the-highway" trucks for use by mining and other essential industries and for export.

Ready-Mixed Concrete

EXECUTIVE SECRETARY V. P. Ahearn of the National Ready-Mixed Concrete Association, in executive letter No. 107, stated that P.R.P. while theoretically available to the ready-mixed concrete industry is really designed only for companies which use more than $5000 worth of basic metal in 3-month periods. The P-100 order remains in effect. For sub-contractors and suppliers whose dollar volume of orders on hand is 50 percent or more in Army and Navy contracts or subcontracts, field officers have been authorized to assign preference ratings on the PD-3A form for repairs.

RUGGED and DEPENDABLE HEAVY-DUTY TRUCKS from SMALLER UNITS

... and Uncle Sam Approves!



YOU NEED BIG-CAPACITY, HUSKY TRUCKS for today's jobs ... but you can't buy standard equipment of this type now.

QUITE A PROBLEM? NO!

For years successful operators with tough, difficult, heavy-duty, on or off-the-highway hauling problems have saved time, money, men and material with

THORNTON Four-Rear-Wheel DRIVE

From coast to coast in the U. S. A. and in countries all over the world, 1½ to 3-ton trucks have been converted with THORNTON units into DURABLE, FLEXIBLE, HEAVY DUTY VEHICLES that out-pull, out-last and out-maneuver standard trucks costing double or more.



Put TWO driving axles under the load instead of one, double the gear speeds, better springing and load flotation, with vastly superior tractive ability . . . all of this for less money!

Government approval? Yes, up to now. But these things are subject to change . . . so act quickly. Contact your nearest Truckstell-THORNTON dealer, or wire factory direct. Trained men will engineer this equipment to the requirements of YOUR PARTICULAR JOB.

THORNTON TANDEM CO.
8719-8779 GRINNELL AVE. DETROIT, MICH.
Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL
"When you need TRACTION you need THORNTON"

COMING CONVENTIONS

American Institute of Mining Engineers, Industrial Minerals Division, Bethlehem, Penn., October 22 to 24.

National Crushed Stone Association, Hollenden Hotel, Cleveland, Ohio, January 25 to 27, 1943.

National Sand and Gravel Association, Board of Directors, Hotel New Yorker, New York, N. Y., October 1 and 2, 1942.

National Sand and Gravel Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.

National Ready Mixed Concrete Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.

Maintenance of Air Compressors

(Continued from page 46)

peratures denatured alcohol may be added to the cooling water. For each gallon of water add the indicated number of pints, to lower the freezing point to the listed degree: 2 pints, 20 deg. F.; 4 pints, 0 deg. F.; 6 pints, —20 deg. F.; and 10 pints, —40 deg. F.

Follow Lubrication Schedule

Oil refiners have prepared special air compressor oils and usually have competent service departments available to compressor users. The following list gives the viscosity number of the oil recommended for certain temperature ranges: 70 deg. F. and above, SAE—40; 32 deg. F. to 70° deg. F., SAE—30; 10 deg. F. to 32 deg. F., SAE—20; 0 deg. to 10 deg. F., SAE—10; and below 0 deg. F., SAE—20-W. When oil bath air filters are used, it is advisable to select an oil of the next lowest number to that used in the compressor.

SCHEDULE:

Daily—

Check oil level in compressor pan.

Grease clutch release collar.

Take ¼ turn on water pump grease cups. Be careful not to force grease into the cooling system.

When compressor is WARM, check oil pressure indicators.

STOP COMPRESSOR IF PRESSURE FALLS BELOW TEN POUNDS and locate difficulty.

Weekly—

Tighten water pump packing nuts.

Clean all filters in light engine oil. NEVER USE GASOLINE OR KEROSENE.

Fumes drawn into the air receiver can cause an explosion.

Grease fan bearing.

Grease wheels.

Automatic unloaders and throttle controls require lubrication. Light oil is best. Place a little in the air piping connecting these units. Leather cups in these controls should be kept pliable with a non-mineral oil, neats foot preferred.

Monthly—

Remove and clean air compressor valves. They should be slightly oily, and free of carbon. Oil that is too heavy nearly always forms carbon.

Drain crank case and change oil.

Drop pan and inspect bearings.

Wash out oil pan and pump screen.

Daily, before starting—

Check water level in radiator and replenish with clean water. Open

(Continued on page 81)

The Renewable Lip of This Dipper *Saves for Quarries and Pits . . . and Uncle Sam*

Next to the teeth, the lip of a dipper gets the most wear in digging and loading material. In loading shot rock, the lip receives impact shocks and abrasive wear. And in pit work, it must combat the extreme abrasion from the scouring of the sand and gravel or clay as it passes over the lip.

Amsco engineers, cognizant of this abusive service, developed the Amsco Renewable Lip Dipper in 1930. This made it unnecessary to scrap an entire dipper front when a lip had become worn. Although occasionally dippers had been made with renewable lips, they all were of the riveted type. The Amsco renewable lip, being fastened to the dipper back by internal U-bolts and to the lower (renewable) front by interlocking joints and pins, is removed and replaced quickly and easily. To replace a riveted lip wastes hours of labor and shovel operating time, while replacing an Amsco lip is a matter of minutes.

The long-proved durability of shock and abrasion resistant 13% manganese steel, of which these dippers are made, plus the ability to renew those parts which received the brunt of the wear, gave operators, for the first time, a dipper that increased shovel hours and lowered maintenance costs.

The economy of the Amsco Renewable Lip Dipper (Patent No. 1,945,064) is attested to by the fact that over 3,500 have been purchased. The more continuous operation they allow through ready replacement of worn lips or other parts, is more important now than ever.



Amsco Renewable Lip Dippers, as well as Amsco Missabe Dippers and Amsco one-piece small capacity dippers, and dipper parts, are illustrated in Bulletin 641-D which we will send on request.

Replaceable teeth, replaceable lip and replaceable front casting help three ways to keep this dipper off the scrap heap.

Amsco

AMERICAN MANGANESE STEEL DIVISION
OF THE AMERICAN BRAKE SHOE & FOUNDRY CO.
Chicago Heights, Illinois

Manganese Steel Castings for shocks and abrasion.
Chromium-Nickel Alloy Castings for heat and corrosion resistance.
Power Shovel Dippers. Dredge and Industrial Pumps.
Welding Materials for reclamation and hard-surfacing.

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO. OFFICES IN PRINCIPAL CITIES

FINANCIAL NOTES

RECENT DIVIDENDS

Canada Cement Co., Ltd. 6½% pfd. (p100)	$1.25	Sept. 21
Canada Crushed Stone Co., Ltd.	$ .10	Sept. 15
Consolidated Cement Corp. A	.35	Aug. 15
National Gypsum Co. $4.50 pfd.	1.12½	Sept. 1
Ohio River Sand Co. 7% pfd. (p100) (arrears)	1.75	Sept. 1
Pennsylvania-Dixie Cem. Corp. pfd.	.50	Sept. 15
Southern Phosphate Corp.	.10	Sept. 30
Superior Portland Cement Co.	.50	Aug. 23
U. S. Gypsum Co. pfd.	1.75	Oct. 1
U. S. Gypsum Co.	.50	Oct. 1
Virginia-Carolina Chemical Corp. 6% ptc. pfd. (p100) (arrears)	5.00	Aug. 20

PEERLESS CEMENT CORP., Detroit, Mich., had a net profit after federal income taxes, of $137,457 for the six months ended June, 1942, equivalent to 44 cents a share. This compares with $168,206 or 54 cents a share for the similar period in 1941.

KANSAS CITY CRUSHED STONE CO., Kansas City, Mo., had a net profit, after taxes, of $29,350 in 1941, thus eliminating the deficit surplus that existed at the end of 1940. Total income was $110,822 and expenses were $68,653. Current assets on December 31 were $93,517; current liabilities, $22,643.

•

KENTUCKY STONE CO., Louisville, Ky., had the following comparative income account for the years ended April 30:

	1942	1941
Net sales	$939,688	$777,397
Costs & expenses	685,181	598,190
Depreciation & depletion	94,989	76,547
Operating profit	159,518	102,660
Inc. bond interest	10,020	11,625
Income taxes	68,422	25,377
Net income	81,077	65,657
Previous earnings surplus	136,141	63,028
Credits	.....	48,814
Debits	40,021	41,358
Earnings surplus, 4-30	177,197	136,141
[1] Times chg. earn.	15.92	8.83
Earned per share	$10.46	$8.47
No. of shares	7,750	7,750

[1] Before income taxes.

•

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., had a net profit of $2,170,269, after taxes and other charges, for the twelve months ended June 30, 1942. After dividends of $226,968 paid on the 4 percent convertible preferred stock, the earnings were equal to $2.68 a share on 726,234 shares (par $25) common stock. This compares with $2,638,790 or $3.32 a share on 726,244 common shares for the 12 months ended June 30, 1941.

•

PENNSYLVANIA-DIXIE CEMENT CORP., New York, N. Y., and subsidiaries had the following comparative statement of income for the twelve months ending June 30:

	1942	1941
Net sales	$10,503,454	$8,577,778
Cost, expenses, etc.	7,569,310	6,348,924
[1] Depreciation & depletion	504,670	463,835
Operating profit	2,429,474	1,765,019
Other income	36,425	41,652
Total income	2,465,899	1,806,671
Interest	[2]213,574	276,243
Federal income tax.	[3]699,750	387,000
Excess profits tax.		86,250
Conting. reserve	[3]440,000	.....
Net profit	1,112,575	1,057,178
[2] Times int. earn.	9.49	6.54
Earnings, preferred share	$9.18	$8.72
[4] Earnings, common share	0.66	0.52
No. of preferred shares	121,200	121,000
No. of common shares	400,000	400,000

[1] Additional depreciation charged to special reserve; 1942, $445,842; 1941, $460,835.
[2] Before income and profits taxes.
[3] On basis of revenue bill passed by House of Representatives on July 20, 1942.
[4] Disregarding preferred arrears.



UNION-FORMED Wire Rope

CUTS COSTLY DELAYS

Time is flying—and to keep schedules moving smoothly, replace worn equipment; avoid costly delays by installing **Union-Formed** (preformed) Wire Ropes. These durable, high quality ropes deliver service far surpassing that of ordinary wire ropes—and save you money in the long run. Write—wire—or consult your telephone directory.

WRITE FOR
ROPE DOPE
This periodical bulletin filled with current rope data will be sent you free of charge.

UNION WIRE ROPE CORPORATION
2156 Manchester Ave. Kansas City, Mo.
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New Orleans • Monahans • Portland • Ashland, Ky.

UNION Wire Ropes
The "ULTIMATE LOW COST WIRE ROPE"

4-42

Maintenance of Air Compressors

(Continued from page 79)

cocks in air tank and intercooler and allow accumulated water to drain.

Check fan belt tension. Keep pulley tight on shaft.

Daily, after starting—

Close drain cocks in air tank and intercooler.

Check lubrication as indicated by oil pressure gauge.

Check air pressure gauges.

Test safety relief valves on air tank and innercooler.

Wipe dirt off machine.

Check tightness of all bolts and nuts.

Stop every air leak that develops.

Weekly—

Drain sludge from crank case oil filter.

Check clutch to see that it does not slip. Slipping causes rapid wear.

Annually—

Have the entire outfit completely overhauled by a competent mechanic.

Clean out radiator cores, water jackets and intercooler.

Inspect and renew if necessary all water hose connections.

To Shut Down, before stopping the engine—

Open the unloader control. This slows the engine.

Release the clutch.

Stop the engine.

Open air valves and drain air tank and intercooler.

Bearing Adjustment

Crank Shaft, ball or roller bearing—

Usually no adjustment is needed. Such bearings last almost indefinitely with proper lubrication.

Babbitt-lined—remove thinest shim.

Connecting Rod, steel-backed babbitt-lined—

Replace with new bearings.

Bronze-backed babbitt-lined—

Remove thinest shim.

Wrist Pin—

Usually not adjustable; if worn or scored, replace both pin and bushing. Bushing should always be reamed to true distortion caused by pressing into place. CAUTION. Replace wrist pin locks in piston to prevent end travel of wrist pin which scores cylinder wall. NOTE—Expand aluminum piston by placing in boiling water for 5 minutes before inserting the wrist pin. CAUTION. Be sure that no oil passages are closed by improperly placed bushings.

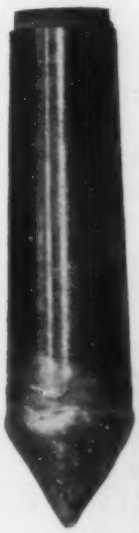
In making internal repairs, be careful not to get dirt into the compressor. Keep parts off the ground. Do not get hands covered with grit. NEVER USE WASTE for wiping parts —small pieces get into and plug oil lines.

In ordering spare parts send the following data to the manufacturer: (1) shop number and Class of compressor, as given on the name plate attached to the base of the compressor; (2) the name of the part and its number. This is usually cast or stamped on the part. Some few small parts can be identified by referring to spare part list.

The manufacturer who made the air compressor is equally interested in efficient and economical performance. In case of any trouble, get in touch with him. He can give you better service and advice than you can get anywhere else.

Remember, lubrication, clean air and good common sense will give long and satisfactory performance from your portable air compressor.

Editor's Note: While this article deals primarily with portable compressors, much of the information is applicable to stationary compressors.



LONGER LIFE for CENTERS when HARD FACED with

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Hard Surfacing Alloys and Overlay Metals

COLMONOY faced centers last from 3 to 5 times as long as centers of high speed steel. The unground centers pictured here — unretouched—have been coated with COLMONOY No. 6. Note the uniformity of these oxy-acetylene welding applications.

The extremely high wear resistance of the hard surface of COLMONOY overlays will protect all vital wearing parts in the rock products industry. Mild steel parts coated with COLMONOY alloys wear from 3 to 10 times as long as new parts made of high alloy steel.



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COLMONOY

Hard Surfacing Alloys and Overlay Metals

Carbon Dioxide From Lime Kilns

(Continued from page 57)

system as arranged for continuous operation with two kilns fired alternately. If natural gas is the fuel, one could get by with just one kiln supplemented with a substantial gasometer.

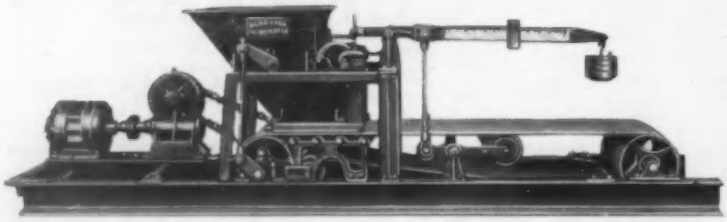
Occasionally we hear of electrical methods of retorting limestone, but that is too expensive a procedure to be practical even where electrical current is cheap. There is not only the matter of conversion of limestone into lime to be considered, which requires a great deal of heat, but the preheating of the limestone, radiation losses and, in addition, sensible heat would not be recoverable.

Electrical Heating of Kilns

Electrical heating could however be used in conjunction with this kiln in a supplementary manner during the retorting period in which the CO_2 is driven off (U. S. Patent No. 2199384). This optional use of electricity would lengthen the period during which the CO_2 would be given off. During the period of heating up the kiln the electric current would be off, while the normal processes of stone preheating, of lime cooling and drawing, and of heating up the charge and off walls would take place. It only would be used during the strategic period when pure CO_2 would be generated and so for every kilowatt-hour of energy 2½ lb. of lime and 2 lb. of additional CO_2 gas would be given off.

The electric heating elements would be in the lower kiln portion, below where the combustion process would take place and so out of the high heat which might damage them. With the interest being shown in lime and magnesium oxide, magnesium metal, chalk and carbon dioxide gas and possible other related products, many lime plants will soon cease being just lime plants and the industry will become more interesting and more worth working for. One can not be anything but sorry for the man who is in a thing for just the living he makes out of it. It is the interest in one's work, the accomplishments and the overcoming of difficulties that make life more worthwhile.

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By their speed and accuracy in proportioning materials Schaffer Poidometers are playing an important part in the nation's titanic struggle for production supremacy.

Schaffer Poidometers are sturdy and strong. They can take the punishment imposed by increased wartime tempo—and like it.

If you have a proportioning problem—raw or finished materials—write for Catalog No. 2.

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Exploring Mica Sources

HUNDREDS of old mica quarries in Connecticut, not operated in generations, are being investigated as possible wartime sources of the mineral. Several options for mineral rights have already been acquired. The State Park and Forest Commission has leased a five acre tract in the Meshomasic State Forest to the New Haven Trap Rock Co., which is planning to re-open an abandoned mica mine. The company will pay the state 5 percent of the sale price of all the mica mined. The lease was granted because the company has the available equipment on hand.

Quick Bombing Repairs

THE ASPHALT INSTITUTE, New York, N. Y., has just issued its "Specification for Stockpile Asphalt Paving Mixtures for Making Quick Repairs of Bombed Surfaces." Under the two main divisions of "Materials" and "Preparation and Composition of Mixture" there are 11 sections dealing with mineral aggregates, different mixes, and plant equipment.

Phosphorus Plant

TENNESSEE VALLEY AUTHORITY is proceeding with plans to construct a new $5,000,000 phosphorus plant near Mobile, Ala.

Chemists' Corner

(Continued from page 58)

wood materials. This mixture with wood became very soggy when treated with water, and, then, the insulating values were lost.

TABLE IV: TEMPERATURES AT THE VARIOUS PERIODS IN DEGREES F.

Heating Up		
Time in Minutes	Rock Wool	Insulim
0	82	82
15	95	104
30	183	167
45	268	216
60	318	277
75	390	315
90	390	338
105	390	346

The insulim was heavier than the other materials for equal volumes. However, the weight of insulim was less than the weights of the other materials for equal insulating values. This is based on the fact that 1 cm. of insulim showed the same rate of heat rise as 4.5 cm. of the gypsum insulating materials.

The weight of a given volume of each was determined, then the weight of each material to give the same insulating value as 100 grams of rock wool was calculated from the ratio of 4.5:1.

TABLE V: RELATIVE WEIGHTS OF INSULATING MATERIALS

	Weight of 264 ml.	Weight to equal insulation value of 100 g. of rock wool
Insulim	269	60
Rock Wool	100	100
A commercial gypsum insulating material	125	125
Another gypsum	192	192

Summary

(1) Hydrated lime can be waterproofed by mixing with 0.5% or more of rosin in a ball mill for 2 hours.

(2) This waterproof hydrated lime has over 4 to 4.5 times the insulating value of gypsum waste or rock wool.

(3) The waterproofed lime could be flowed into wall spaces in the way that other insulating materials are used.

(4) It is evident that this lime cannot be used at temperatures above about 840 degrees Fahrenheit (450 degrees Centigrade), because of the dehydration of hydrated lime at about this temperature.

(5) This lime is fire-proof and insect-proof.

(6) No way was found of making lumps or blocks of the insulim. There are objections to the use of a fine powder in the insulation of buildings.

(7) A smaller weight of insulim is required for an equal insulating value than for the other materials. Sixty pounds is equal to 100 of rock wool, 125 of a certain commercial gypsum insulating material, and 192 of another gypsum product.

Bureau of Mines to Establish Laboratory

U. S. BUREAU OF MINES will establish a $500,000 electro-development laboratory in the region of Bonneville and Grand Coulee dams to study the recovery and processing of minerals, according to an announcement by Director R. R. Sayers. Chief objectives will be to improve magnesium and aluminum recovery methods and to conduct research on the processing of certain other critical minerals.



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Sand runs faster every hour where there's a rugged Plymouth Locomotive on the job to give faster, more dependable, more powerful performance. That's why Plymouth has for years been the choice of Rock Products Producers. That's why it's in the front ranks doing efficient haulage in war production. That's why it will pay you to find out now why and how Plymouth can keep you a step ahead of future competition. Write for facts and figures.

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Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

CANADA CONTROLS MANPOWER

By KENNETT R. WILSON

Ottawa Correspondent

DUE TO the critical labor shortage, a series of important restrictive steps to conserve and increase manpower in essential war industry was



Kennett R. Wilson

introduced in August by Canada's director of National Selective Service. The program has as its two main objectives the control of employment and labor priorities.

Included are provisions that no employer will be able to lay off any employe and no employe will be permitted to quit his employment without giving reasonable written notice. This ruling is subject to commonsense exceptions. An employer will not be permitted to interview or engage any applicant unless the applicant has a permit from an employment office. Permits to seek employment will be primarily granted to persons who produce their "notice of separation" (notice in writing that employment has ceased) or who can establish that they have been unemployed or not gainfully occupied.

Control is to be exercised over "help wanted" and "situations wanted" advertisements. Employers and employes may continue to advertise at their own cost but only in the name of the National Selective Service. Selective service officers are to be authorized to require that unemployed persons, after a given period, accept any suitable work and that persons not employed full-time transfer to available, full-time suitable work of high labor priority.

Any employed person who is induced by a national selective service officer to accept more important war work will be entitled to reinstatement in his previous position upon termination of such essential work. Local officers are invested with considerable discretion to grant or deny permits to seek employment and to require unemployed persons to accept work. Aggrieved employers, employes or trade unions will be allowed the right to appeal any decision.

Labor Priorities

As to labor priorities, a list of "reserve" occupations drawn up at the outbreak of war by Lt. General A. G. McNaughton, now head of the Canadian army, is used as a rough guide to army enlistment. Early this year, a list of restricted or essential occupations and industries was named which were prevented from hiring male help of military age without a special permit.

A labor priority schedule has been established under four heads: very high, high, low and unclassified. It is based primarily on a classification of industries but some industrial firms are assigned by name to their respective classes.

Price Ceilings

An item of 50 million dollars has passed through Parliament to meet the estimated cost of price ceiling subsidies for the fiscal year ending March 31, 1943. Apparently, these subsidies would run probably twice that amount. One recent item added, 30 million dollars, is to cover the extra cost of war risk insurance, etc., in bringing oil tankers into Canadian ports. Canada is committed under the price ceiling not to raise the price of fuel, oil, gasoline, etc., which is a reason for the subsidy. Other subsidies cover farmers' commodities and imported merchandise.

In spite of price ceilings, increases in prices of foodstuffs have resulted in a rise of 2.4 in the cost of living, and an increase in the cost-of-living bonus has brought the total bonus to $4.10 a week in most instances. The 2.4 rise in bonus will put an estimated $1,000,000 a week into the pockets of employes and (with price ceilings) will take that much more out of what profit is left to industries.

Twenty thousand men are to be called up for military service in September and the drain on man power is daily becoming more acute.

There is evidence that the war production machinery of the United States and Canada is being increasingly meshed through the Joint War Production Committee. Exchange of designs and information about methods to avoid costly plant expansion, for example, and the avoiding of duplication in production have resulted. Short term gaps in supplies and equipment have been closed by one country getting materials from the other. Slight alterations of specifications for war machinery have enabled both countries to supplement production of one or the other.

Tennessee Phosphate

TENNESSEE VALLEY AUTHORITY has practically completed its mining and washing plant at Bear Creek, and the preparation and sintering plant at Goodwin. Dried phosphate sand of very high grade is now being shipped to Muscle Shoals. It is reported that the plant is a standout in design and construction. Overburden is stripped by dragline, and hydraulic transportation is used from the mine to the washer and for a distance of three miles from the washer to the preparation plant.

Tennessee producers of ground rock for direct application to the soil are running at peak capacity and had no opportunity to accumulate stocks for the heavy months of March, April, August and September. An advance in price of 50c per ton for ground rock has been placed into effect.

New Use for Dry Ice

W. S. FARISH, president of the Standard Oil Co. of New Jersey, testifying before a committee of the U. S. House of Representatives on the synthetic rubber problem, said a new process employs dry ice (CO_2) to obtain temperatures of 150 deg. F. below zero for a key chemical operation. The employment of extreme cold, rather than pressure, to keep the chemicals in liquid form, is the novel feature. Mr. Farish said the supply of dry ice will be the limiting factor in the volume of production.

Erratum

IN THE ARTICLE "Longest in This Hemisphere," which appeared in ROCK PRODUCTS, August, 1942, page 65, the Marquette cement kiln was described as the "largest" in this hemisphere. This was a mechanical error and should have read "longest." There are kilns in the United States 12 ft. in diameter and about 450 ft. in length.

Recent Rate Changes

Following are the latest proposed changes in freight rates up to and including the week of August 15

Trunk Line

40852 (shippers). **Crushed stone,** C. L. (See Note 3), from Millville, W. Va., to Culbertson, Penn., 95c per net ton (to expire with December 1, 1942), in lieu of current commodity rate of $1.21 per net ton. Reason: (See Note 5).

40853 (shippers). **Ganister rock,** not ground, C. L. (See Note 3), from Berkeley Springs, W. Va., to Ashtabula, O., $2.58 per net ton. Reason: (See Note 5).

40885 (shippers). **Limestone, ground or pulverized,** C. L., min. wt. 60,000 lb., from Florence and West Rutland, Va., to points in the state of Ohio subject to Zanesville, O., grouping, as shown in Agent Curlett's tariff I. C. C. No. A-330, $4.57 per net ton in lieu of current 6th class rate. Reason: (See Note 5).

40889 (shippers). **Fluorspar,** in packages or in bulk, C. L., ex-river, min. wt. 40,000 lb., from Aliquippa, Allegheny (Pgh. N. S.), Bessemer, Colona, Etna, Glassport, Glenwood, Hays, Jct. Trf. (33rd St.) Station, Pittsburgh, McKeesport, Mifflin Jct., Munhall (Kenny Yd.), New Kinsington, Pittsburgh, Rankin, Rochester, South Duquesne and Munhall, Penn., to Cornwells Heights, Penn., $4.40 per net ton in lieu of current 6th class rate of 29c per 100 lb. Reason: (See Note 3).

40905 (shippers). **Limestone,** broken, crushed, ground or pulverized, C. L., min. wt. 60,000 lb., from West Rutland and Florence, Vt., to Monongahela, Penn., $4.13 per net ton, in lieu of current sixth class rate. Reason: (See Note 5).

40916 (increase) (carriers). To cancel commodity rate of 28c per 100 lb. on firestone (mica schist), C. L., from Ardsley, Glenside, North Hills and Somerton, Penn., to Sherbrooke and Lennoxville, Que., as published in Reading Co., Tariff I. C. C. No. 2216. Reason: (See Note 4).

40937 (shippers). **Limestone,** viz.: Crude, fluxing, foundry and furnace, when loaded in bulk in open top equipment, C. L., min. wt. 90 percent of the marked capacity of car, etc., from Limeton, Va., to Monessen, Penn., 139c per gross ton, in lieu of current sixth class rate of 25c per 100 lb. Reason: (See Note 5).

41025 (shippers). **Limestone,** crude, fluxing, foundry and furnace, C. L. (See Note 3), from Blue Bell, Penn., to Pencoyd, Penn., 74c per gross ton, in lieu of current commodity rate of 80c per gross ton. Reason: See Note 5.

M-4476 (shippers). **Ground or pulverized limestone,** C. L., min. wt. 60,000 lb., from Stafford, N. Y., to points in Trunk Line territory and Trunk Line-C. F. A. Border points, rates shown in exhibit, copy of which will be furnished by the commission. Reason: See Note 5.

41029 (shippers). **Limestone,** other than ground or pulverized, C. L. (See Note 3), from Williams, Penn., to Nichols Siding, N. Y., 271c per gross ton, in lieu of current sixth class rate of 17c per 100 lb. Reason: See Note 5.

41033 (carriers). **Furnace slag; slag** (the refuse of chrome or manganese ore), which is without commercial value for the further extraction of metal, also **slag,** C. L. (See Note 3), from Niagara Falls, N. Y., to North Grafton, Mass., 330c per net ton, in lieu of current sixth class

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

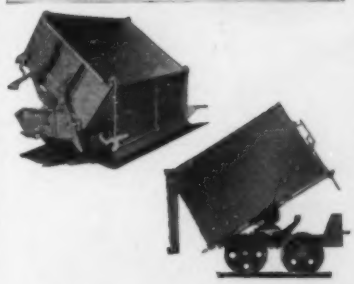
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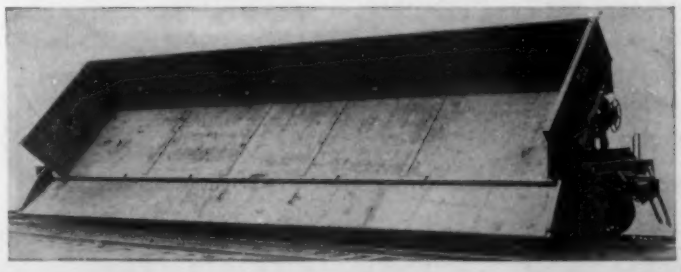


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rate. Reason: Comparable with rate applying on similar commodities.

41047 (carriers). To amend Rule 1, page 3, of W. Md. Ry. Tariff ICC No. 8712, publishing rates on slag, crude or crushed, in bulk, C. L., by elimination of the note reading as follows: Note—Cars forwarded to destinations not passing over scales en route will be waybilled at estimated weights provided for in Western Maryland Railway Tariff ICC No. 8180, P. S. C. Md. No. 1843. Reason: To eliminate cross-reference of tariff numbers in connection with minimum weight.

41048 (shippers). **Crushed stone**, C. L. (See Note 3), from Hopatcong Jct., N. J., to Lake Denmark, N. J., 88c per 2000 lb. Reason: See Note 5.

New England

58216 (1-A). To cancel Item 595 of B&M ICC A-3041 naming rate of $1 per net ton on **common sand and gravel**, Westboro, N. H., to Beecher Falls, Vt., and West Stewartstown, N. H., and apply class rates in lieu thereof. Reason: Obsolete.

58283 (1-A). To cancel Item 621 of B. & M. I. C. C. A-3041 naming rate of 165c per net ton on **silica sand** from Boston, Mass., to Rockland, Me., permitting class rates as published in Agent Doe's I. C. C. 157 to apply. Reason—Rate not being used.

58285 (2-R). **Sand and gravel**, min. wt. 60,000 lb., Northfield, Mass., to North Willimantic, Conn. Present—6½ (Item 10-A, Sup. 9, C. V. Tariff G. F. D. 160-C, I. C. C. A-6955). Proposed—93 per net ton. Reason—To permit movement of considerable sand and gravel from and to the points involved.

58356 (1-R). **Sand**, beach or shore, C. L., min. wt. 50 tons of 2000 lb. Gloucester, Mass., to Beverly, Boston, Lynn, Mass. Proposed—61, 106, 84; present—100, 121, 110 (subject to Ex Parte 148 increases). Reason: See Note 5.

58448 (1-A). To cancel rates on **ground silica rock** from Keene, N. H., to Chester, Mass., Hartford, Conn., Mt. Vernon, N. Y., New Bedford, Mass., and Valley Falls, R. I., as per Item 230 of B&M ICC A-3046, allowing class rates to apply. Reason: Rates not being used.

58466 (2-R). **Common sand and gravel, screened or crushed**, min. wt. 50 net tons except when cars of lower capacity are furnished for carriers' convenience the minimum weight will be the mkd. cap. of the car but not less than 40 tons of 2000 lb., Bedford, Mass., to Portland, Me. Present, sand, 121c net ton, gravel, 132c net ton; proposed, 80c net ton. Reason: See Note 5.

58495 (1-A). **Limestone**, pulverized, min. wt. 80,000 lb., Swanton to St. Albans, Vt. Present, 70 net ton; proposed, 80 net ton (subject to Ex Parte 148 increase). Reason: To increase subnormal rate.

58496 (1-R). **Gravel and common sand**, min. wt. 50 tons of 2000 lb., except when cars of lower capacity are furnished for carriers' convenience, the min. wt. will be the marked capacity of the car, but not less than 40 tons of 2000 lb., Farmington, N. H., to North Berwick, Me. Present, 77, on sand and run of bank gravel and 88 on screened or crushed gravel per B&M ICC A-3045; proposed, 57 net ton.

58591 (1-A). To cancel rate of 66c per net ton on **stone, riprap**, from Milford to East Boston and Boston, Mass., as per Item 70 of NYNH&H ICC F-3746 and page 73 of NYC ICC 342, which is not being used, permitting class rate of 12c per 100 lb. to apply.

56698 (1-A). To cancel commodity rates on **feldspar and syenite**, crude or ground, C. L., from Bath, Bates, Bethel, Cathance, Me., Cold River, Dunns, Keene, N. H., Littlefield, Norway and Topsham, Me., to various destinations in Trunk Line territory as published in Item Nos. 380 and 385 of B&M RR Tariff ICC No. A3050 and Item 365 of GT Ry Tariff ICC No. 228 and apply in lieu thereof Class 21 rates as published by exceptions to Official Classification, Item 1930 of NEFA TB Tariff No. 30-I, ICC No. 448.

Illinois

IRC 8144-7. **Agricultural limestone**, C. L., min. wt. marked capacity of car, except when car is loaded to full visible capacity, actual weight will apply.

To	(1)	(2)	(3)	(4)
Leeds, Ill.	66	50	77	55
Toluca, Ill.	66	50	77	55
LaRose, Ill.	66	50	88	55
Wilbern, Ill.	77	55	88	60

(1) Present, from Joliet, Ill.
(2) Proposed, from Joliet, Ill.
(3) Present, from McCook, Ill.
(4) Proposed, from McCook, Ill.
(Rates subject to Ex Parte 148 increases.)

IRC 9444. **Stone, crushed, coated with oil, tar or asphaltum; gravel and/or sand, coated or treated with oil, tar or asphaltum; also slag, coated with oil, tar or asphaltum**, straight or mixed C. L. (See Note 3), but not less than 40,000 lb., from Krause, Ill., to Dupo and Valley Junction, Ill. Present, $1.45 net ton. Proposed, $1.08 net ton (net rate, no switching charges are absorbed). (Subject to Ex Parte 148 increases.)

Central

70801. **Crushed stone or crushed stone screenings**, in bulk, in open top cars, C. L. Establish on, from Fultonham, O., to Guysville, O., 99c, and Porterfield, O., 110c per net ton, via N. Y. C. (W), Grosvenor, O., B & O. R. R.

70806. **Slag.** Amend commodity description:

Balance! That's why DIAMOND Screens Outperform

12 Standard sizes from 2' x 5' to 4' x 14' and in single, double, 2½ and three deck models. Other sizes on order.



Scalping screens. Combination scrubber screens. Shaker screens. Drag washers.

Daily maximum output at low production costs demands a vibrator that performs smoothly and efficiently —that operates with a true circular motion, forcing the material evenly over the screen and downward to the delivery end . . . DIAMOND vibrating screens are properly balanced. And the *improved* 1942 models have features that demand careful consideration . . . Diamond Engineers will gladly cooperate with you in solving your crushing and screening problems, and at no obligation.

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ESTABLISHED 1888
AND THE MARA MANUFACTURING CO. DIVISION
MINNEAPOLIS, MINNESOTA, U. S. A.

(a) Of Item 2660 of C. F. A. L. Trf. 100-A, reading as follows, viz.:

"Slag (a product of iron and steel, blast or open hearth furnaces) in bulk in open top cars, C. L., min. wt. 90 per cent of marked capacity of car," from Chicago, Ill., etc., to Cincinnati, O., so as not to apply on expanded slag.

(b) Of Item 2680 of C. F. A. L. Trf. 100-A, reading as follows, viz.:

"Slag, granulated (light weight concrete aggregate), C. L., min. wt. marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply," from Chicago, Ill., to Cincinnati, O., and Louisville, Ky., to read as follows, viz.:

"Slag, expanded (construction material aggregate), C. L., min. wt. 90 per cent of marked capacity of the car, except when car is loaded to full cubical or visible capacity, actual weight will apply, but not less than 80,000 lb."

(c) To restrict application of present rates on slag (a product of iron and steel blast or open hearth furnaces), C. L., not further described, between points in C. F. A. territory, including Extended Zone C in Wis., and W. T. L. "Northwest" territory, also from points in aforesaid territories to points E. of the W. T. of E. T. L., so as not to apply on expanded slag.

71085. **Crushed stone or crushed stone screenings,** in bulk, in open top cars, C. L.; **agricultural limestone,** unburnt (not ground or pulverized), in bulk. Establish on, from Barberton, O., and a new local point on the Erie R. R. just west of Barberton, O., to be temporarily known as "Mine Site," O., to destinations in Ohio, rates as shown below.

(Rates in cents per net ton)

	—Proposed Rates From— Barberton, O.		
To rep. pts.—	Single Line	Joint Line	Mine Site, O.
Akron, O.	44	..	44
Alliance, O.	88	88	88
Ashtabula, O.	116	116	116
Ashtabula Harbor, O.	116	116	116
Ashland, O.	88	88	88
Berea, O.	94	94	88
Canton, O.	66	77	77
Chagrin Falls, O.	..	88	88
Cleveland, O.	78	78	78
Coshocton, O.	105	105	105
Cuyahoga Falls, O.	44	77	77
Elyria, O.	94	94	94
Grafton, O.	88	88	88
Justus, O.	66	77	77
Kent, O.	55	77	55
Leetonia, O.	99	99	99
Lodi, O.	55	77	77
Lorain, O.	99	99	94
Madison, O.	110	110	110
Mansfield, O.	99	99	99
Massillon, O.	55	77	77
Minerva, O.	94	94	94
Newton Falls, O.	66	88	88
New Philadelphia, O.	88	88	94
Niles, O.	94	94	94
Orrville, O.	55	77	77
Painesville, O.	105	105	105
Phalanx, O.	88	88	88
Rittman, O.	44	77	44
Salem, O.	99	99	99
Solon, O.	66	88	66
Wadsworth, O.	44	77	44
Warren, O.	94	94	94
Wooster, O.	66	77	77
Youngstown, O.	99	99	99

71097. **Rip rap,** C. L. Establish on, from Joliet, Ill., to stations on C. M. St. P. & P. R. R., West Dana, Ind., to Terre Haute, Ind., 97c (plus 297c per car) (subject to Ex Parte 148).

71195. **Stone.** Cancel the following items from B. & O. R. R. Trf. H-3486-E, viz.: Items 240 to 258 incl. on stone, viz.: Rough rubble; rip rap; quarry scrap; agricultural limestone (not ground or pulverized), in bulk, in open top cars; and crushed stone, in bulk, C. L., from Osgood, Ind., to pts. in C. F. A. territory, and Items 485 to 490 incl., on stone, viz.: Quarry scrap, rip rap and rubble, also blocks, building, concrete or cement; blocks, cinder cement and curbing, concrete, C. L., from Osgood, Ind., to pts. in C. F. A. territory, Classn. basis to apply.

71314. **Slag or slag screenings** (a product of iron and steel blast or open hearth furnaces), C. L. Establish on, from Detroit, Mich., to Toledo, O., 84c per net ton, subject to Ex Parte 148 increase.

71316. **Dolomite stone, raw or crude,** having value only for chemical purposes, C. L. Establish on, from Bettsville, Bloomville, Gibsonburg, Maple Grove and Woodville, O., to Ludington, Mich., 164c per gross ton, plus Ex Parte 148 increase.

71317. **Stone, crushed,** in bulk in open top cars, C. L. Establish on, from Marble Cliff, O., to Parkersburg, W. Va., 165c; Ravenswood, W. Va., 187c; Millwood, W. Va., 176c; Spencer, W. Va., 209c; Ripley, W. Va., 198c; Cairo, Pennsboro, W. Va., 176c; Elk, W. Va., 160c; West Hamlin, W. Va., 176c; Kenova, Ceredo, W. Va., 165c, and Wayne, W. Va., 176c per net ton.

71322. **Lime, common, hydrated, fluxing, quick, slaked or fibred,** C. L. Establish on, from Northwestern Ohio Group 1 origins to Berkey, O., 12c, min. wt. 30,000 lb. and 10c, min. wt. 50,000 lb., subject to Ex Parte 148 increase.

71328. **Lime, agricultural,** C. L., min. wt. 30,000 lb. Establish on, from Luckey, O., to Berkey, O., 9c, via N. Y. C. (W.), Wauseon, O., D. T. & I. R. R., Denson, O., O. & M. R. R., subject to Ex Parte 148 increase.

71331. **Slag** (a product of iron or steel blast or open hearth furnaces), C. L. Establish on, from Ashland, Ky., to Buckeye Ordnance Works, O., 77c per net ton, plus Ex Parte 148 increase.

71355. **Slag, commercial crushed,** in open-top cars, C. L. (See Note 3). Establish on, from Cleveland, O., to Blissfield, Mich., 138c per net ton, via N. Y. C. (W)

★ ★ KEEP YOUR EAGLE WASHER ROLLING with EAGLE REPAIR PARTS

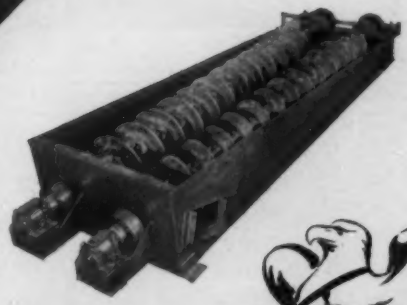
In our present emergency Eagle stands ready to furnish expertly designed Repair Parts for Eagle Equipment.

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SAUERMAN
LONG RANGE MACHINES

direct, subject to Ex Parte 148 increase.

71365. **Slag, crude** (product of iron furnaces, not crushed, granulated, ground or pulverized), C. L., in open top cars. Establish on, from Massillon, O., to Canton, O., $18.60 per car, plus Ex Parte 148 increase. Rate to expire 6 months after effective date.

71381. **Sand, all kinds, and gravel,** in open top cars, C. L. Establish on, from Gravel Pit, O., to Cumberland, O., 99c per net ton, subject to Ex Parte 148 increase, via P. R. R.-Zanesville, O.-B. & O.

71382. **Limestone, agricultural, unburnt,** C. L., min. wt. 50,000 lb., **and agricultural limestone, unburnt,** in open top cars; **agricultural limestone screenings** in open top cars; also **crushed stone and crushed stone screenings** in open top cars. Establish on, from Woodville, O., to certain points in Ohio, rates as shown below.

	Proposed rates (cents per net ton) To (B. & O.)
Standley, Ohio	132
Sherwood, Ohio	143
Justus, Ohio	154
Beach City, Ohio	154
Bannock, Ohio	165
Armstrong, Ohio	143
Willard, Ohio	110
Belleville, Ohio	132
Madeira, Ohio	198
Cumberland, Ohio	165

Agricultural limestone, crushed stone and crushed stone screenings in open top cars, minimum weight 90 per cent marked capacity of car, etc.

	(Proposed rates (cents per net ton) To
Eagleport, Ohio	149
Brokaw, Ohio	160
Waterford, Ohio	171

71383. **Ground or pulverized limestone, unburnt,** C. L., min. wt. 60,000 lb. Establish on, from Bloomington, Ind., to Peoria, Ill., 226c; Sycamore, Ill., 237c per net ton.

71451. **Sand** (except sand, molding, bonded (naturally or otherwise), and except ground or pulverized sand), or **gravel,** in open top equipment, without tarpaulin or other protective covering, C. L. Establish on, from Clairton, Penn., to McKeesport, Bessemer, Homestead, Donora, Penn., 66c; Pittsburgh, Verona, Brackenridge, Latrobe, Penn., 77c; Midland, Penn., 88c; Butler, Penn., Steubenville, O., Weirton, W. Va., and Johnstown, Penn., 99c per net ton., via P. R. R. direct, subject to Ex Parte 148 increase.

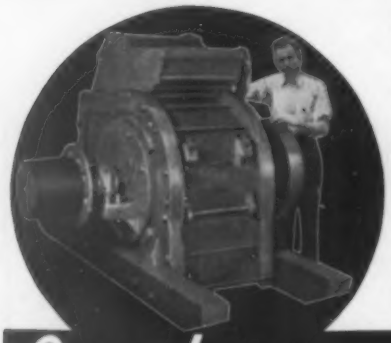
72017. **Slag, commercial crushed** (a product of iron and steel blast or open hearth furnaces), in open top cars. Revise rates on, to be as follows: From Cleveland, O., to B. & O. R. R. stations, viz.: Middleford, Burton, East Claridon, Center Road, Chardon, Clarks, Concord, Painesville, West Fairport and Fairport Harbor, O., 99c; from Lorain, O., to West Farmington, Bundysburg, Middlefield, Burton, East Claridon, Center Road, Chardon, Clarks, Concord, Painesville, West Fairport and Fairport Harbor, O., 116c per net ton, via B. & O. R. R. direct, subject to Ex Parte 148 increase.

72018. **Slag, granulated,** having value for filling purposes only, in open top cars, C. L., min. wt. 80 percent of marked capacity of car. Establish on, from Youngstown, O., to Lordstown, O., 39c subject to Ex Parte 148 increase, and to expire Dec. 20, 1942.

Southern

28220 (carriers). Cancel rate of 60c net ton on **crushed stone,** C. L. Rockmart and Lithonia, Ga., to Marietta, Ga.

28581 (shippers; suggested by carriers). **Silica (silex), sand, silica,** C. L. min. 60,000 lb. Establish rates from Sprucepine and Minpro, N. C. and Erwin, Tenn., to various destinations in Official territory based 19 per cent of Dkt. 15879 first class Appendix E scale, increased 10 per cent under Ex Parte 123, and subject to Ex Parte 148 increases based on short line distances not subject to minimum rates.



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Women Operate Gravel Plant

PRODUCERS of gravel, faced with a shortage of manpower, might possibly have to replace men with women for some jobs. Hugo Gerschefske, operator of a small plant at Bloomingdale, Ill., lost a man to the draft and two others to defense industries, but kept his plant going 100 percent this Summer when the women of his family volunteered to fill the gaps.

His plant has a daily capacity of 200 cu. yd. and consists of a jaw crusher-screening unit and a belt conveyor to fill truck-loading bins. Three "men" are needed to operate it.

Mr. Gerschefske runs the shovel in the pit and Mrs. Gerschefske tends the receiving hopper. Her job is full-time and consists of removing boulders over 8-in. at the hopper and keeping the material flowing on to a belt conveyor that feeds the plant.

His daughter, 16-year-old Hildegarde, is putting in her vacation from Glenbard High School, controlling the operation of the crusher and screens. The younger daughter Ruth, aged 10, is the water "boy" and helps prepare the noon-day lunch for the family. There have been no delays in making shipments and the family considers the Summer happily spent.

New Gravel Enterprise

GORDON PIXLEY, a long-time employe of the Buffalo Slag Co., Buffalo, N. Y., has purchased an interest in a gravel pit near Vandalia, N. Y. Operations began May 1. Mr. Pixley's partner is Flosin Bump, Franklinville.





Above: Hildegard Gerschefske has the responsibility of keeping the plant equipment operating continuously. Below: The entire Gerschefske family, even to the dog, stopped just long enough for a picture in front of the plant



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Round Strand
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Preformed
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The STAND-OUT LOADER

The HAISS "75" is everybody's idea of what a stockpile loader should be. Fast. Mobile. Rugged. Simple. Economical. Write for catalog.

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Crushed Stone Directors Discuss War Problems



One of the sessions at the recent meeting of the National Crushed Stone Association directors at Hot Springs, Va.

THE ANNUAL SUMMER MEETING of the board of directors of the National Crushed Stone Association, at the Homestead, Hot Springs, Va., July 23, was marked by very live off-the-record discussion on the interpretation of the O. P. A. Maximum Price Regulations. To answer questions were T. R. Boyd, masonry construction materials section, Building Materials Branch, O. P. A., and Roy S. Parsons, legal adviser, O. P. A. The introductions were made and discussion started by Otho M. Graves, past-president.

Suffice to report, that the representatives of O. P. A. could not answer specifically many of the points raised, and we doubt if the members of the board present went away with much enlightenment. However, since then the O. P. A. has issued, under date of July 29 a long supplement to its General Maximum Price Regulations (No. 188) which is evidentally designed to clear up some of the points raised. This is long and involved and we recommend that interested producers send for a copy. Under 1499. 166 in this Price Regulation No. 188, are cement, lime, gypsum, crushed stone, sand and gravel, ready-mixed concrete, concrete products, slag and practically all the miscellaneous rock products.

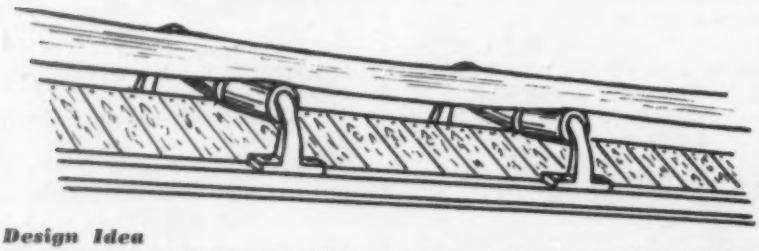
Apparently, there is no way for a producer to get a higher price for his commodity than his highest price in March, 1941, regardless of how long that price had been in effect, except by submitting his costs to the O. P. A. and getting its approval of a new price, if the old one shows an actual loss. His March prices were probably on carry-over business from 1941 or earlier, and his costs have increased, but as every producer knows, it is impossible to fix costs or even estimate costs before the season is sufficiently advanced to determine his volume.

Association Affairs

The report of A. T. Goldbeck, engineering director of the association, described continuing work on concrete airport runways. The association, he said, had supplied the War Department with information regarding the relative merits of various coarse aggregates.

The report of J. R. Boyd, administrative director, detailed some of the special work of his office called for by war conditions. These included direct services to government agencies, particularly the Mining

(Continued on page 92)



Design Idea

To avoid wear on belt from spillage and to save steel, this Wisconsin sand and gravel company constructed a sloping deckplate from scrap lumber.

Since conveyor is on incline, side slope of deckplate prevents aggregate from rolling down cover to tail pulley, where it could injure belt.

Your

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FUNDAMENTAL CARE

Too much tension of a conveyor belt can greatly reduce the life of the belt.

It should be the job of every good maintenance man in a Rock Products plant to check frequently for this possible condition.

Causes of too much tension, besides improper adjustment of take-ups, include incorrect size of pulleys, "frozen" idlers, lack of lubrication, and overloading of belt.

. . . Another way to conserve rubber belting is to buy Goodall Brands—Built to Last Longer.

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World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

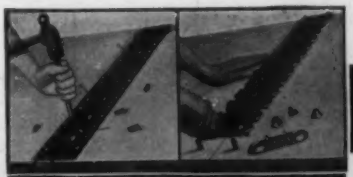
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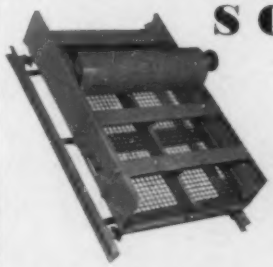
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—a variety of metals, particularly Hendrick High Carbon, Heat Treated Steel.

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CATALOG



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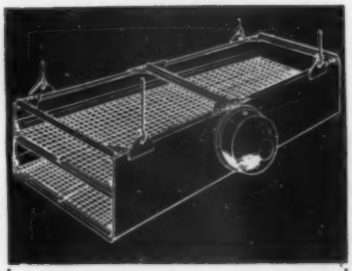
Branch of the War Production Board; the furnishing of specific information to member companies. In regard to Priorities, Mr. Boyd said:

"In view of the increasingly large number of priority requests which companies are finding it necessary to file with the Mining Branch for machinery, equipment, and supplies, it is natural that the suggestion should have been made a number of times that the procedure be simplified by arranging for blanket ratings. Unfortunately, this is not possible without a basic amendment to P-56, which seems entirely out of the question at the present time. The Mining Branch is, however, now prepared to extend to qualified producers of fluxing stone, a blanket A-1-c rating which can be used for maintenance and repair parts only. Specific application must be made to the Mining Branch for authority to use this blanket A-1-c rating. It is our understanding that the Mining Branch has sent out this information to flux stone producers who they believe could qualify. While the Mining Branch has established no arbitrary rule as to qualifications, in general, a plant to qualify must have at least 75 percent of total production in flux stone."

Convention Plans

Although doubt was expressed that war transportation conditions would permit the holding of industrial association conventions next year, plans are being made for holding the annual convention at the Hollenden Hotel, Cleveland, Ohio, in January, 1943. The convention will be held in the forepart of the same week the National Sand and Gravel and the National Ready Mixed Concrete Associations meet in Cleveland, at the Statler Hotel. There will be no exhibits at either convention. There is still a strong sentiment in the National Crushed Stone Association for holding the convention at the New Yorker Hotel in New York. The time set is the last week of January.

The following directors and producers were present: Wm. M. Andrews, president and chairman of the board; L. J. Boxley, Reid Callanan, F. O. Earnshaw, Otho M. Graves, T. Ward Havely, E. J. Krause, J. D. Lane, Russell Rarey, J. A. Rigg, James Savage, F. W. Schmidt, Jr., O. M. Stull, Stirling Tomkins, D. L. Williams, W. F. Wise, A. L. Worthen, J. Harper Fulkerson, L. W. Shugg and (guests) H. W. Stockard, J. L. Flythe (both of the Raleigh Granite Co.)



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1. Full Floating Shaft.
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OBITUARIES

LEONARD WESSON, operating manager, Universal Atlas Cement Co., New York, N. Y., died recently at the age of 65. Mr. Wesson began his business career with his father who owned lead mines in southern Missouri. Entering the cement industry as assistant superintendent of the cement division of the former Illinois Steel Co. in 1905, he was later promoted to superintendent of No. 2 works at South Chicago, and in 1910 became assistant to the president of its successor organization, the Universal Portland Cement Co. From 1919 to 1930, he was assistant general superintendent, Atlas Portland Cement Co. When the Universal and Atlas companies were joined in 1930, he became assistant operating manager, and in 1937 became operating manager, which position he occupied until his death.

•

FREDERICK LEE STONE, vice-president, Universal Atlas Cement Co., New York, N. Y., died recently at the age of 66.

•

JOHN J. HURLEY, well known to many lime producers because of his long association with the Rockland-Rockport Lime Co., Rockland, Me., died recently at his home in Somerville, Mass., at the age of 53.

•

HENRY F. BADE, marine superintendent, Gallagher Bros. Sand and Gravel Corp., New York, N. Y., died recently at the age of 51.

New Incorporations

Salisbury Quarrying Co., Salisbury, N. C., has been incorporated with an authorized stock of $10,000. Incorporators are B. F. Coggins and W. Herbert of Atlanta, Ga., Olin O. Rambo of Elberton, Ga., and George Wain of Salisbury, N. C.

Agricultural Lime Products Co., Havana, Fla., has been granted a charter to deal in lime products. Capital stock 50 shares, no par value. W. B. Bishop, L. B. Ellinor, and L. B. Ellinor, Jr., are the directors.

Salina Concrete Products, Inc., Salina, Kan., is the name of a new firm incorporated to conduct a cement business with a capital of $25,000. V. B. Clements is the agent.

Sand and Gravel Supply Corp., Norfolk, Va., has been organized as a sand and gravel business with a maximum capital of $35,000. Benjamin Restalli, Brooklyn, N. Y., is the president, and James B. Denny, Dickson Bldg., Norfolk, Va., is the attorney.

The Hockley Gypsum Co., Wilmington, Dela., is the name of a new company with a capital of $50,000. Principal office, Corporation Trust Co., Wilmington. Incorporators, H. E. Grantland, Everett Mayo, S. M. Brown, Wilmington.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

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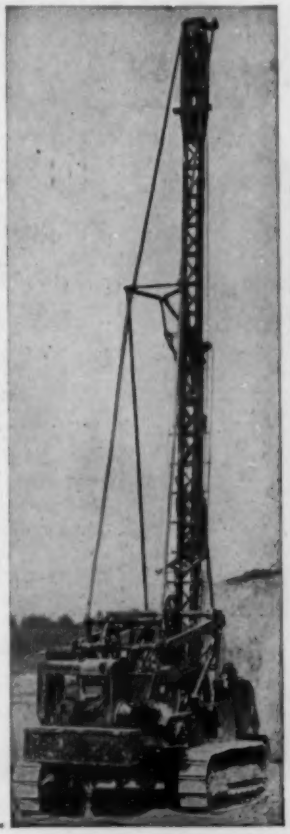
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You will want to know more about it.

Write for Bulletin BD-1141.

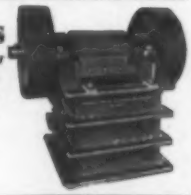
KEYSTONE DRILLER CO.

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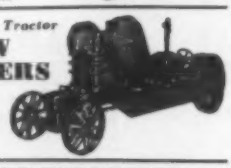


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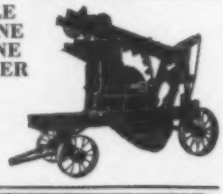
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GRUENDLER CRUSHER & PULVERIZER CO.
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Industrial Sand Capacity

NATIONAL INDUSTRIAL SAND ASSOCIATION has submitted to Dr. Wilbur A. Nelson, Administrator of the Mining Branch, the results of a recent study of industry capacity, in a report made available to a number of federal agencies. A questionnaire was addressed to all members of the Association and to key non-member companies under date of April 7 and returns were received from companies producing more than 10,000,000 tons in 1941. Total production of industrial sand was 10,644,943 tons as reported in 1940 by the Bureau of Mines. A study of the results indicates that, for the country as a whole, substantial surpluses existed in nearly all grades as of the date of the survey. An exception was the finer grade of unwashed and unbonded sands for iron and non-ferrous work. Since then, acute shortages in certain territories have developed in the productive capacity for the finer grades of dried sand. These shortages are being overcome by plant expansion. The accompanying table summarizes the capacity survey of foundry sands.

Kind of Sand	1941 Production Tons	1942 Capacity Tons	1942 1st qtr. Shipments Fdry. Accts. percent	1942 Foundry Requirements Tons	Surplus Tons
Unbonded Sands for Steel, Iron and Non-ferrous					
Washed, up to 45[1]	2,574,358	3,278,567	22	756,354	514,214
Washed, above 45	2,028,028	3,060,010	47	1,492,016	493,139
Total	4,602,386	6,338,577		2,248,370	1,007,353
Unwashed, up to 45	863,783	1,674,140	99	1,238,967	426,535
Unwashed, above 45	531,223	1,092,905	50	526,791	300,503
Total	1,395,006	2,767,045		1,765,758	727,038
Unbonded Sands for Iron and Non-ferrous					
Washed, up to 45	94,184	158,339	94	108,893	43,795
Washed, above 45	499,616	1,007,781	98	523,478	474,311
Total	593,800	1,166,120		632,371	518,106
Unwashed, up to 45	835,435	1,272,070	98	702,328	553,033
Unwashed, above 45	815,676	1,220,700	59	894,620	
Total	1,651,111	2,492,770		1,596,948	[2]544,686
Bonded Sands					
Steel Castings[3]	81,250	136,711	100	98,378	38,333
Iron Castings[4]					
Light	540,680	1,169,137	100	634,657	534,480
Medium	403,729	976,180	100	479,562	496,618
Heavy	390,888	785,465	100	519,842	265,623
Total	1,335,297	2,930,782		1,634,061	1,296,721
Miscellaneous Sands					
Ground	452,952	585,712	37	187,969	112,383
Blast	217,007	315,840	85	232,650	50,639
Grand Total	10,328,809	16,733,557		8,396,505	4,295,259

[1] A.F.A. Fineness Number.
[2] See comment (Deficit 8347 tons).
[3] See footnote 4.
[4] Includes 149,333 tons of 1941 production and 179,000 tons of 1942 capacity suitable for steel castings; also much of this sand suitable for brass and other non-ferrous work.



Any SIZE
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Any METAL
Any PERFORATION

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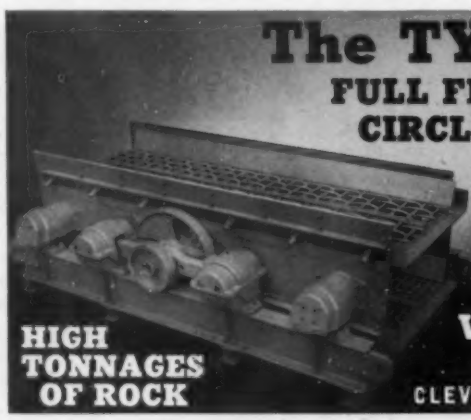
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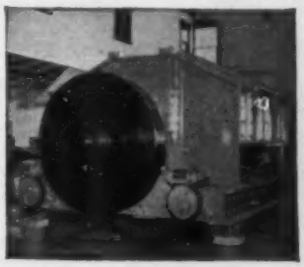
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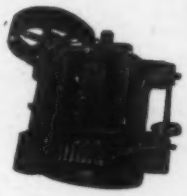
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Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

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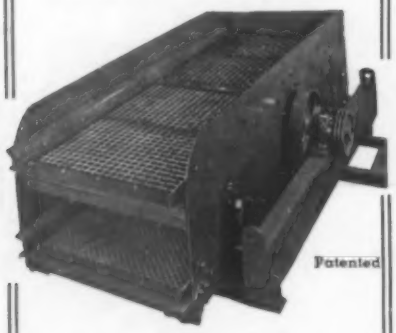
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Screen Equipment Co.

Manufacturers' News

Good Roads Machinery Co., New York, N. Y., has given a leave of absence to K. B. Hubbard to serve as inspector of material for the U. S. Navy at Trinidad.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has appointed S. H. Mortensen as chief electrical engineer of the company's plants at West Allis, Cincinnati, Boston and Pittsburgh. Mr. Mortensen was engineer-in-charge of A-C design for ten years before his recent appointment.

Taylor-Wharton Iron & Steel Co., New York, N. Y., which this year is celebrating its 200th anniversary, has announced the promotion of Clifford O. Richards as purchasing agent, succeeding R. C. Schaeffer, who has resigned. Mr. Richards' office will be at the Taylor-Wharton plant in Easton, Penn.

The Mine & Smelter Supply Co., Denver, Colo., announces the appointment of J. D. Nicholson as general manager. Oscar H. Johnson will continue as vice-president in charge of manufacturing.

Krembs & Co., Chicago, Ill., has appointed Universal Power Corp., Cleveland, Ohio, as distributor of Krembs welding products in the Cleveland trade area, embracing all of northern Ohio.

The Timken Roller Bearing Co., Canton, Ohio, has made the following promotions in the advertising and sales promotion department: Worthing H. Stone becomes assistant advertising manager and is to be in charge of advertising for the Railroad, Farm Implement, Automotive and Rock Bit Divisions of the company; S. L. Huffman has been advanced to manager of the News Bureau, in addition to continuing his present duties of handling the advertising of the Steel and Tube Division; Peter C. Poss continues his present activities as assistant advertising manager, and in addition will take over the publishing of technical information for the engineering fraternity, an activity which the company plans to expand considerably in cooperation with the war effort.

The Buda Co., Harvey, Ill., announces that Frank M. Boylan has joined the company as a field representative in the industrial division handling railroad products and lifting jacks.

R. G. LeTourneau, Inc., Peoria, Ill., has appointed Murray M. Baker to the newly created post of executive vice-president, according to an announcement by R. G. LeTourneau, president. He will make his headquarters at the Peoria plant. Mr. Baker was appointed in a move to coordinate the executive activities of the company and increase its effectiveness in the war effort, thus enabling Mr. LeTourneau to devote a greater share of his time to engineering activities. Mr. Baker has been associated with earth-moving and heavy construction equipment since 1909.



Murray M. Baker

A. Leschen & Sons Rope Co., St. Louis, Mo., reports the death of Harry J. Leschen, president of the company.

Cummins Engine Co., Columbus, Ind., has announced the appointment of Deloss Cummins as service manager, succeeding Robert Stratton, who has accepted a commission in the Signal Corps of the U. S. Army. The company has taken larger quarters at 1812 Fair Building, Columbus, where J. B. Chambers is regional manager.

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CRUSHERS, TUBE MILLS,
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AT MIDDLE GRANVILLE, N. Y.

1—20" Allis-Chalmers Superior McCully Gyratory Crusher, feed opening 20" wide, capacity 125 t.p.h. at 3" setting, 275 t.p.h. at 5¼", Shop No. 8311. With or without 125 H.P. 3/60/440 v. Slip Ring motor.

1—No. 4 Kennedy Gyratory Crusher, 8" feed opening.

1—Set 36" dia. x 16" Sturtevant Crushing Rolls.

2—Sets 40"x16" Colorado Iron Works Crushing Rolls.

4—Sturtevant Bucket Elevators, two steel encased, 36' c/c, 10x6" buckets.

1—Sturtevant Swing Hammer Mill.

1—70' Jeffrey Steel Pan Conveyor, 24" wide, steel frame.

AT WARREN, PA.

6—16" Steel Frame Belt Conveyors in 15' sections. 6" longitudinal channels, "Link-Belt" troughing and return idlers with anti-friction bearings, 85' long c/c with motor and reduction, gear drive—also 50', 100', 125', 150' and 185' lengths.

AT GLOUCESTER, MASS.

1—22"x50" Champion Jaw Crusher.

1—10"x29" Champion No. 1020 Crusher, with roller bearings.

1—3 compartment Blaw-Knox Bin, 75 tons, with Butler 3-beam weigher.

1—50'x100' Portable Steel Building.

2—30" Belt Conveyors—28' c/c, 52' c/c.

1—24"Belt Conveyor, 170' c/c.

12—Electric Motors, all 3/60/220 v.; 100 H.P., 75, 50, 30, 25, 15, 10, 5 and 3 H.P.

AT COLLINWOOD, TENN.

1—6'x22" Hardinge Pebble Mill, silex lined.

1—4'x20' Caldwell, double shell Rotary Dryer.

1—7500 gal. Horizontal Oil Storage Tank.

1—200 H.P. DeLaVergne Horizontal single cylinder Diesel Engine, Type GH, 165 RPM.

AT BELLEFONTE, PA.

1—5 roll Raymond High Side Pulverizer, with vacuum separator, Raymond exhauster, cyclone collector and inter-connecting piping.

AT NEWARK, N. J.

2—6'x16" Hardinge Conical Ball Mills, iron lined, including ball charge; one with 50 H.P. Slip Ring motor.

2—Direct Heat Rotary Dryers—5'x26' Ruggles-Coles, 6x24' Lancaster Iron Works.

2—Belt Conveyors—24"x105' c/c, 30"x132' c/c.

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This machine is in working condition and $307.39 in new repair parts go with the deal.

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(1) Gruendler 10 x 16 Roller Bearing Jaw Crusher.
(2) 24 x 18 Pulverizers.
(1) 30 x 24 Pulverizer.
(1) 32" Single Cage Gravel & Stone Crusher.
(1) 42" Fine Grinding Ring Roll Mill.
(1) 42 x 36 Pulverizer.

(USED AND REBUILT)

(1) Gruendler 15 x 24 Plain Bearing Blake Type Crusher.
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(1) Factory Rebuilt (in original crate) LeRoi RAP2, 65 H.P. Gasoline Engine.

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2,500	8x16" Cast Iron Used Pallets, each	.11
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5,000	8x16" Pressed Steel Cored Pallets for 1¼" face shell blocks, each	.25
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500	8x16" Pressed Steel Cored Pallets for 1" face shell blocks, each	.10

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NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates, all other Accessories. Although our tonnages are not as large as heretofore, most sizes usually available. Every effort made to take care of emergency requirements.

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1—Kennedy No. 27 gearless gyratory.
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1—Set 30" x 16" Traylor Rolls.
1—600 cu. ft. Ingersoll-Rand Steam Compressor.

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2—40 ft. steel flat cars, 100,000 lb. capacity, cast steel "U" section truck frames, new decks, interchange condition.

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Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

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12—Paving Breakers, Ingersoll-Rand, Gardner-Denver, Sullivan and Thor.

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1—Cleveland wagon drill, Model DR-6, mounted on two pneumatic tired wheels. Latest model, can adjust for any direction drilling. Equipped with air feed and blowing device.

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3—Jaw Crushers: 1—12"x30" Acme; 1—10"x20" Climax; 1—9"x16" Acme.

2—Gyratory Crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin.

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2—1¼ yd. Link Belt pull shovel attachments. Boom 22', lever arm 9', with 1¼ yd. dipper for attaching to model K-42 Link Belt crane.

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1—1 yd. Shovel front for an Osgood crane. Boom 20', stick 15' with ¾ yd. dipper.

1—1 yd. N.W. shovel front, boom 24', stick 18", with 1 yd. dipper for use on a model No. 105 N.W. crane.

2—1 yd. N.W. pull shovel attachment, boom 24'9", dipper arm 6'6" with 1 yd. dipper for use on a No. 4 N.W. crane.

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1—Wooden body, 2 door dump on 2 wheel trucks. Mfg. Little Red Wagon Co. Body dim. 40" x 26" x 6'4".

4—La Plante Choate all steel 2 door bottom dump, wagons mtd. on 4 wheel trucks, capacity 19 tons.

2—La Plante Choate all steel 2 door bottom dump mounted on 4 wheel trucks. Cap. 8 tons.

2—La Plante all steel two door dump wagons, mounted on 4 wheel trucks. Dim. body 44" x 63" x 36".

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6—4 yard Jaeger Truck Mixers mounted on Heavy Duty Mack Trucks—Good Condition.

2—2 yard Jaeger Truck Mixers on Fords—Ready for work at once.

1—27E Multi-Foote Paver Boom and Bucket—Like New.

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127-04 NORTHERN BLVD.
CORONA, L. I., N. Y.

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Available For Immediate Delivery

8—Rotary Kilns; 7'6" x 60'; ½" steel plate
1—Bonnet Direct Heat Dryer 3'4" x 23'
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1—Rotary Calciner; 6' x 70'
2—Devine Rotary Vacuum Dryers 5' x 30'
2—Smidth Tube Mills; 4'6 x 18'; lined
4—Tyler-Hummer Screens 3' x 5'; with generator
7—Porcelain lined Pebbles Mills up to 48" x 60"
6—Buhrstone Lined Pebble Mills; 6' x 6'
1—Thropp Silex Lined 7' x 6' Pebble Mill
1—Continuous Steel Ball Mill 5' x 8'
1—Abbe Unlined Iron Ball Mill 54" x 42"

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NEW RUBBER

GUARANTEED HIGH GRADE

CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING
ABRASIVE RESISTANT COVERS

Width	Ply	Top Covers
48"	8	1/8" —1/16"
42"	5	1/8" —1/16"
36"	6	1/8" —1/16"
30"	6	1/8" —1/16"
30"	5	1/8" —1/16"
24"	5	1/8" —1/32"
24"	4	1/8" —1/32"
20"	5	1/8" —1/32"
20"	4	1/8" —1/32"
18"	4	1/8" —1/32"
16"	4	1/8" —1/32"
14"	4	1/16"—1/32"
12"	4	1/16"—1/32"

TRANSMISSION BELTING
HEAVY-DUTY— FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

ELEVATOR BELTING
HEAVY DUTY RUBBER COVERED

Width	Ply	Top Covers
12"	6	1/16"—1/16"
14"	6	1/16"—1/16"
16"	6	1/16"—1/16"
18"	6	1/16"—1/16"

ENDLESS "V" BELTS

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"B"—WIDTH— " "
"C"—WIDTH— " "
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Sold in Matched Sets

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1—Raymond No. 3 Automatic Pulverizer.
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1—Type 7, Kent Maxecon Mill.
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1—36" Gauge Whitcomb 12 tons Gas. Locomotive.
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1—3 ton McGann Hydrator.

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120—42" wide Robins Trough Idlers.
100 Selected Head & Tail Pulleys.
300' Gravity Rolls, 14", 17" & 30" widths.
18"x26' L-B. Portable Trough, 5-hp. Elec.
1000' of 42" wide 6 & 8-ply Conveyor Belt.
450' of 30" wide 6-ply Conveyor Belt.
Cotton Belts 12", 14", 17", 18", 20", 48" w.

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9"x15"-A & 13"x24"-B Farrel Jaw types.
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16"x24" Corrugated & 16"x42" Crushing Rolls.
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1'x2' Marcy Laboratory Mill, with steel balls.

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35' Continuous on No. 844 Chain, 30"x18"-A Buckets.
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300' Elevator Belt 20" wide 8-ply Waterproofed.
15 Tons Selected Sprockets, Chains, Etc.
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75-hp. F-M Diesel type YV, 2-cyl. 300-RPM.
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6—24"-g. Flat Cars with 4'x12½' wood decks.
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2—No. 7 Telsmith Sand Dewatering Tanks.
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60-yd. Butler Bin with Dial scale.
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For immediate sale. 1 Kennedy Van Saun Slugger Roll Crusher 40" x 36". 1 Rock Pan Feeder 42" x 13'9". 1 Kennedy Van Saun Hammer Mill Crusher 54" x 48". Same as new condition. Never been used. Overhead Structural Steel Crane Runway 780' long. Robins Conveying Belt Equipment for 30" system, troughing idlers, return idlers, gears, pulleys, etc. 1 Whitcomb Gasoline 10 Ton Locomotive. 1 Large Structural Steel Ore Bin. 3 Westinghouse Induction Motors and 3 Reduction Gears. Other items on hand. All bought new; never been in service.

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12 24-yd. Koppel	24, 16-yd. Western
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Also Locomotives, Cranes, Shovels, Etc.

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Two Practically New Electric Motors and One Oil Circuit Breaker

1—Westinghouse squirrel cage induction motor—440 volt—3 phase—60 cycle—125 H.P.—1350 ft. lb. pull-out torque—160 Amp.—900 R.P.M. synchronous speed—their Type "CS" Special No. 56N475—Frame No. 774C—Serial No. 1S56N475—$490.00 Net FOB Lima.

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Both motors are ball bearing equipped and will take a limited amount of end thrust. The stub end of the motor, to which a pinion or pulley can be applied, is 3.875 diameter, tapered for a distance of 4-7/16". The taper is 1¼" per foot. The keyway is 7/8" x 5/16". The extreme end of the shaft is threaded to take an SKF nut and lock washer to hold the pinion or pulley on the tapered stub end.

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No. 7½ Allis Chalmers Gyratory Crusher, excellent with 60' continuous 18" bucket elevator.
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4—4 Yd. Koppel 36" ga. Heavy duty Quarry cars, Shovels, Cranes, Compressors, Screens, etc.
250 HP, 250 V DC Nat Gas Eng Gen Sts.

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14 ton Vulcan loco, 36" gauge, steam.
1¼ Yd. Northwest Shovel Attachment.
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Erie, 40 ft. crane boom.
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Compressors, 360', 500', 630'.
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28—Motors, 3 to 100 HP, 3/60/220-440 volt.
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MISCELLANEOUS: Machine Shop, small tools, piping, valves, fittings, steel plate, etc.

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BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
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Owen R A & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
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18 Steel Skips 6½ x 6 x 2½.
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46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
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HOISTING ENGINES
Gas: 15, 20, 60, 100 & 120 HP.
Electric: 30, 52, 90, 100 & 150 HP.
Steam: 6½x8, 7x10, 8½x10, 10x12, 12x14.

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75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
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JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
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10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

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116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

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8, 10 and 14 ft. Separators, Gayco & Bradley.

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36x60 Fairmount & 36x20 Diamond.

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10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 36x12, 30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x42, 48x36, 60x42, 84x66, 36x16, 9x36.

CONE & GYRATORY CRUSHERS
42 in. McCully Mammoth Gyratory.
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18 in.,24 in.,30 in.,36 in. and 48 in. Symons Disc.
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2—Traylor T-12 Bulldog Gyratory, also 16 inch 8 in. Traylor T. Gyratory.
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10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.

SYNCHRONOUS MOTOR GENERATORS
100 K.W. RIDGWAY 3/60/2200-250-275 volt.
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52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
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BELT: 1000 Ft.60 In., 700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1642 Ft.24 In., 517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In., 300 Ft.14 In.
IDLERS: 54 In.,42 In.,36 In.,30 In., 24 In.,20 In.,18 In.,16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In.,30 In. & 36 In.Sections.

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36 In.x20 Ft.,3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x 30 Ft., 42 In.x24 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft.,6 Ft.x60 Ft.,6 Ft. x 20 Ft., 6 Ft.x70 Ft.,10x20, 7½x100 & 8x110 Ft. Kilns.

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GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,25 Ton 100 Ft.Boom,75 Ton 135 Ft.Boom.

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GASOLINE: 3 Ton,5 Ton,8 Ton,12,14,and 30 Ton.
STEAM: 9 Ton,20 Ton,40 Ton,60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
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HUMMER, ROTEX, NIAGARA & ROBINS.
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COMPLETE PLANTS BOUGHT AND SOLD
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12—40 ton, standard gauge, Flat Cars, air brakes, etc. Rebuilt.
12—4 yd. cap. all steel Rocker Dump Cars, standard gauge.
2—Jordan all steel Spreader Cars, air operated, late type, new condition.

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1—7' dia., 55' long, Vulcan made up ⅝" plate, complete, new condition, suitable for use as Dryer or Kiln.
1—5' x 28 ft.

ELECTRIC HOISTS
2—80 H.P. Electric Hoists, cut steel gears, banked levers, with 10 H.P. separate electric Swinging Engines. New condition.
1—60" dia., 36" face, single drum. Hoist with 150 H.P. slip ring motor, complete; also, one 100 H.P.; new condition, immediate delivery.

BUCKETS
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1—Hayward 2½ cu. ft. orange peel bucket.

BELT CONVEYORS
1—42" x 547 ft., 1—30" x 550 ft.; 1—36" x 700 ft.; also roller bearing type with belt and motors.

BOILERS
1—100 H.P. Scotch Marine return tubular Boiler.
2—400 H.P. and 3—375 H.P. Water Tube Boilers, 150 lbs. steam pressure.

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1—15 ton capacity, length 1800 ft. between towers, 150' high, with hoist, carrier, cables, etc.

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1—Nordberg Track Shifter, gas engine driven, standard gauge.

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All standard makes Size No. 4, openings 8 x 30 to Size 21, openings 42 x 134".

JAW CRUSHERS
8 x 16 up to and including 60 x 84.

CRUSHER SPECIALS
1—Allis Chalmers 24 x 36, used only three months.
1—Symons 2' and 1—4' Cone Crushers, coarse bowl.
1—Buchanan and 1—Farrel 13 x 30.
3—Traylor 12" x 16" gyratory.
2—Allis Chalmers 6" and 10" Superior.
1—Telsmith 16-A Crusher.
1—Acme 14 x 26 Crusher.
1—New Holland 7 x 12".

DRAG SCRAPER & SLACKLINE
2—Sauerman 2 yd. capacity Slackline and Drag Scraper outfits, Hoists have 150 H.P. motors direct coupled; also 110 ft. steel mast.

LOCOMOTIVES, STEAM AND GAS
1—Baldwin 80 ton, six wheel switcher with tender.
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1—American 40 ton, 4 wheel, std. gauge, saddle tank, cylinders 14 x 22, 190 lbs. working pressure, ASME boiler. For Rent Only.
2—Vulcan 32 ton, 4 wheel, std. gauge, saddle tank, air brakes.
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1—Plymouth 8 ton, gas.

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2—45 ton Heisler geared Locomotives, 36" gauge.
8—Plymouth and Whitcomb, 4, 7, 8, 14, 16, 20 ton; 24" and 36" gauge.
2—Ironton, 36" gauge, type WO-7000 lb. chassis, Storage Battery, new condition; Also, one Trolley type 7 ton, 250 volt.

FIRE PUMP—UNDERWRITERS
1—1000 GPM @ 100 lbs. pressure with 125 H.P., 220 volt, A.C. Motor and control.

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1—12" Morris, belt drive.

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Steel, 7 tons cap., 5' x 8' top, 5' x 5' bottom, 3½' deep, with eyes for dumping.

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1—Electric Shovel with 3 yd. or 4 yd. dipper.
1—Northwest ¾ yd. Shovel and Crane, 45' crane boom and fairleads.
1—2 yd. Steam, full revolving, crawler tread.
1—General ½ yd. Crane, 35' boom.

TRACTOR
1—Cletrac 55 gas driven with angle dozer.

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Erie 100 ton 3 compt. bin with weigh batcher.
B.K. 50 ton, 2 compt. bin with weigh batcher.
Johnson Ready Mix Concrete Plant, 150 yards.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Rex Pumpcrete Model 190 with pipe.
Koehring 27E Paver, boom and bucket.
Smith 27E Paver with 40 foot Tower.
Ransome 28-S 1 yd. stationary mixer, elec.

SPECIALS!!!
Derrick Boat equipped with 20 ton Wiley Whirley, 100' bm., 12 x 12 Steam Hoist. Hull 33 x 114 x 10'.
Cletrac BG Tractor, bulldozer, gas, new 1941.
Butler 16 cu. ft. Asphalt Pug Mill.
2—Steel Stiff-leg Derricks, 10 tons, 100' bm.
2—Steel Stiff-leg Derricks, 15 tons, 110' bm.
Complete Conveyors, Steel Frames, 24", 30" & 36".
Hardinge Conical Ball Mill, 4½'x16".
Sullivan Compressor, 1051 cu. ft., F.-M. engine.
Schramm Diesel Compressor, 720 CFM, port.
American Compressor, 425 CFM., 50 lb. pressure, elec.
Allis-Chalmers cent. pump, electric, 3500 GPM.
Lawrence cent. pump, Vortex, 8" Portable, gas.
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Barnes cent. 8" pump, gas, portable.
Gould cent. 8" pump, gas, portable.
Dredge Pump 10" FH. cent. 200 HP AC motor.

CRUSHERS—CRUSHER PLANTS
Gyratory crushers: K.V.S. 30, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 24x36, 42x48.
Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS
2 yd. Hayward Clamshell, digging.
1½ yd. Williams Clamshell, rehandling.
2 yd. Hayward Clamshell, rehandling.
1—1¼ yd. Hayward Clamshell Rehandling.
2—⅝ yd. Haiss rehandling clamshell.
⅜ yd. Haiss rehandling clamshell.
20—Battleship Buckets, 2 to 3 yds.

SHOVELS—CRANES
Bucyrus Erie Model 1030 electric tunnel shovel.
2—Marion Steam shovels, 1½ yd. capacity.
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Link Belt K42 Crane, gas, 1¼ yd. cap., rebuilt.
Northwest Model 4, 1¼ yd. gas shovel.
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LOCOMOTIVES—CARS
Vulcan 8 ton, std. gauge, gas.
Milwaukee 6 ton, std. gauge, gas.
Whitcomb 4½ ton, std. gauge, gas.
2—Vulcan 6 ton, gas, 36" gauge.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

CRUSHERS

GYRATORY: 42" Gates K. 20" Superior McCully (Like new). 20" Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 10. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84., 48x66., 42x48., 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x14, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 2-F & 4S. Traylor 36" TZ, 8", 10" & 12". Super. McCully 6" & 10". Newhouse 3, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 13½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16. Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 5 & 9. Jeffrey 20x15 & 36x42. Dry Nos. 20 & 40., Etc.
MILLS: Kennedy Ball 4x6, 5x5 & 5x8. Marcy 6x6 & 10x9. Hardinge 6'x2', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll. Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
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Index to Advertisers

Allis-Chalmers Mfg. Co. (Tractor Div.) 27
American Cable Div. .....Inside Back Cover
American Chain & Cable Co., Inc. .....77, Inside Back Cover
American Manganese Steel Div. 79
American Pulverizer Co....103
Anchor Concrete Machy. Co. 69
Armstrong-Bray & Co..... 91
Babcock & Wilcox Co..... 88
Bacon, Earle C., Inc..... 92
Barber-Greene Co. 14, 15
Besser Mfg. Co.....62, 63, 97
Blaw-Knox Co. 103
Birmingham Rail & Locomotive Co. 97
Bradley Pulverizer Co..... 93
Brill Equipment Corp..... 99
Brooks Equipment & Mfg. Co. 88
Bucyrus-Erie Co. .....Outside Back Cover
Carlyle Rubber Co., Inc.... 98
Cawood, Richard L., Co. .. 91
Chain Belt Co..... 19
Chicago Perforating Co.... 95
Classified Advertising ..97-101
Cleveland Rock Drill Co.... 20
Cleveland Wire Cloth & Mfg. Co. 102
Combustion Engineering Co., Inc. 23
Commercial Shearing & Stamping Co. 78
Concrete Transport Mixer Co. 71
Consolidated Products Co., Inc. 97
Consumers Co. 97
Crusher Service 97
Dempster Bros., Inc..... 95
Denver Equipment Co..... 95
Diamond Iron Wks., Inc.... 86
Dominion Minerals, Inc....101
Eagle Iron Works..... 87
Easton Car & Const. Co... 1
Ensign-Bickford Co. 104
Equipment Corp. of America 97, 98
Fate-Root-Heath Co. 83
First Machinery Corp..... 98
Flexible Steel Lacing Co... 91
Fuller Co. 26
Gager Lime Mfg. Co.....100
Gates Rubber Co..... 3
Gruendler Crusher & Pulv. Co. 94
Goodall Rubber Co..... 90
Gulf Refining Co..... 5
Haiss, Geo., Mfg. Co., Inc.. 89
Hardinge Co., Inc..... 18
Harrington & King Perf. Co. 94
Hayward Co. 95
Hazard Wire Rope Div..... 77
Hendrick Mfg. Co..... 91
Jackson & Church Co..... 73
Jaeger-Lembo Machine Corp. 98
Jaeger Machine Co..... 65
Jeffrey Mfg. Co..... 88
Johnson, C. S., Co..... 67
Kent Machine Co..... 69
Keystone Driller Co..... 93
Knox Mfg. Co..... 92
Koehring Co. 24
Leschen, A., & Sons Rope Co. 89
Lima Locomotive Wks. (Shovel & Crane Div.).... 99
Ludlow-Saylor Wire Co..... 95
McLanahan & Stone Corp.. 95
McLeod, Alexander T.....100
Mack Trucks, Inc..... 8
Marion Steam Shovel Co.... 13
Master Builders Co..... 11
Multiplex Concrete Machy. Co. 73
National Gypsum Co..... 98
Nordberg Mfg. Co..... 21
O'Neill, A. J.....100
Owen Bucket Co.....102
Pennsylvania Crusher Co... 95
Plymouth Locomotive Wks. 83
Pressed Steel Car Co., Inc.. 85
Productive Equipment Corp. 92
Raymond Pulv. Div..... 23
Roebling's John A., Sons Co. 25
Ross Screen & Feeder Co.. 93
Ryerson, Jos. T., & Son, Inc. 28
Sauerman Bros. 88
Schaffer Poidometer Co.... 82
Screen Equipment Co..... 96
Simplicity Engineering Co..103
SKF Industries, Inc..... 6
Smidth, F. L., & Co. .....101, Front Cover
Smith Engineering Works. 12
Smith, The T. L., Co..... 4
Stearns Mfg. Co..... 60
Syntron Co. 103
Teuscher Pulley & Belting Co. 99
Tidewater Equipment Corp.100
Thornton Tandem Co..... 78
Traylor Engineering & Mfg. Co. 7
Tyler, W. S., Co..... 94
Union Wire Rope Corp..... 80
U. S. Treasury Dept..... 22
Universal Vibrating Screen Co. 91
Unverzagt, G. A..... 99
Wall-Colmonoy Corp. 81
Walsh, R. P., Co.....100
Webber Equipment Co..... 96
Westinghouse Electric & Mfg. Co. 16, 17
Wilfley, A. R., & Sons, Inc. 95
Williams Patent Crusher & Pulv. Co..Inside Front Cover



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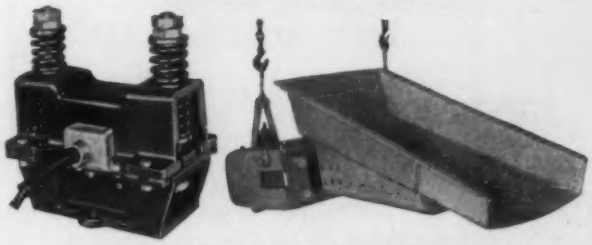
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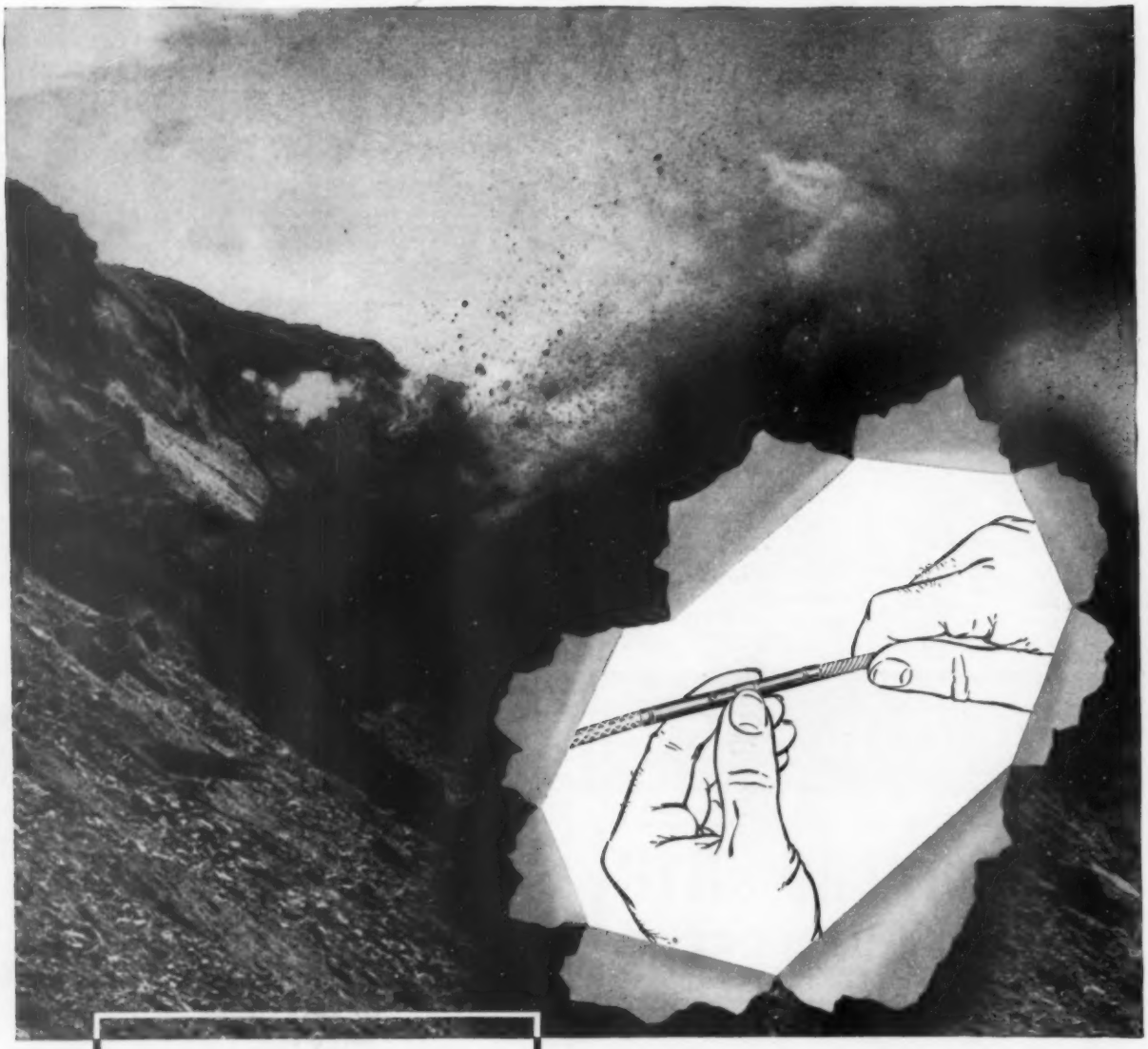


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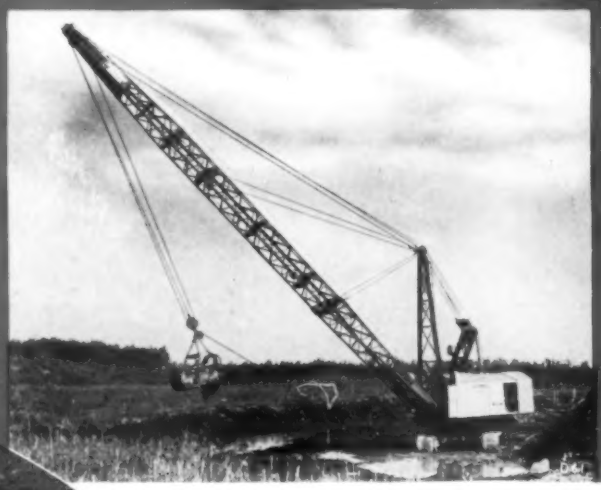
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